

Risk and Protective Factors in the
Mental Health and Substance Use of Opportunity Youth

by

Chanler Hilley

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

Approved July 2020 by the
Graduate Supervisory Committee:

Sarah Lindstrom Johnson, Chair
Kit Elam
Kristin Ferguson
Justin Jager

ARIZONA STATE UNIVERSITY

August 2020

ABSTRACT

The transition from adolescence to young adulthood is an important developmental period, as youth experience rapid changes in many domains of their lives (Settersten & Ray, 2010). These transitions have been linked to both positive and negative turning points in youths' behavior and psychosocial wellbeing (Elder & Shanahan, 2007). Being disengaged from work and school, two important social institutions involved in the transition to adulthood (Havighurst, 1972), has been associated with poorer mental health and increases substance use; in this literature, there is still a dearth of research among youth in the United States of America and on the developmental implications of disengagement (Hilley et al., 2019). Therefore, this dissertation includes two studies to address these gaps with respect to mental health and substance use. Study 1 explores the heterogeneity in youths' engagement and disengagement from work and school at two developmentally relevant time points across the transition to adulthood rather than impose a priori definitions of disengagement. Next, this study explores whether risk and protective factors predict membership in these subgroups. Finally, this study examines subgroup differences in problematic substance use concurrently and longitudinally. Study 2 investigates the cross-lagged associations between opportunity youth (or youth who are neither in school nor working) status and mental health over the transition to adulthood and explores whether familial social support and socioeconomic status mitigate or exacerbate the influence of opportunity youth status on mental health. Findings from these studies support the developmental nature of disengagement (despite its heterogeneity) and its connection with mental health and substance use, as well as suggest the need for additional research into risk and protective factors.

ACKNOWLEDGEMENTS

I wish to express my immense gratitude...

To Dr. Sarah Lindstrom Johnson, who has been an incredibly caring and supportive mentor, who has instilled in me to always consider the “so what” of my research, and who has positively shaped my views on teaching, mentorship and research far beyond what I can explain here.

To my committee: Drs. Kit Elam, Kristen Ferguson, and Justin Jager, who have not only been supportive throughout the dissertation process but who each challenge me to consider interdisciplinary perspectives on human development, families, and community practice as they relate to my research.

To my friends and colleagues in the Sanford School and the PEAC lab, who have provided support in every way possible. A special thanks goes to Michelle, Larissa, Claire, Arlyn, Ana, and Kamryn, who have spent countless hours in coffee shops with me, who have listened and supported, and who inspire me to do work that matters.

To my friends outside of grad school, especially Murtice, Brittany, Vero, Victor, and Brendan, who provided much-needed distractions from this document.

To my roommate, Dr. Catherine LaRoche, with whom I have been incredibly grateful to share my grad school journey, supporting and challenging each other along the way.

To my family for their love and support despite the distance.

TABLE OF CONTENTS

	Page
LIST OF TABLES	vii
LIST OF FIGURES	viii
INTEGRATIVE INTRODUCTION	1
Theoretical Links between Youth Disengagement and Behavioral Health.....	2
The Present Studies	4
DISSERTATION STUDY 1: EDUCATIONAL AND EMPLOYMENT DISENGAGEMENT AS A PREDICTOR OF SUBSTANCE USE ACROSS THE TRANSITION TO ADULTHOOD	7
Substance Use, the Transition to Adulthood, and Historical Context.....	8
Risk Factors.....	10
Protective Factors	12
Educational and Employment Disengagement during Young Adulthood	13
Links between Disengagement and Substance Use	15
Current Study.....	17
Method	19
Procedure	19
Measures	20
Indicators of Disengagement and Related Context	20
Demographic, Risk and Protective Factors.....	21
Substance Use Outcomes	22
Analytic Strategy.....	23

	Page
Results	25
Descriptive Statistics and Preliminary Analyses	25
Latent Profile Model Selection	26
Engagement by Profile at Modal Ages 19/20 and 25/26.....	27
Baseline Covariates as Predictors of Latent Profile Membership	32
Predictors of Modal Age 19/20 Profile Membership	33
Predictors of Modal Age 25/26 Profile Membership	37
Differences in Substance Use by Profile	40
Modal Age 19/20 Substance Use Differences.....	40
Modal Age 25/26 Substance Use Differences.....	42
Discussion	45
Profiles of Engagement and Disengagement	45
Risk and Protective Factors in Engagement and Disengagement.....	48
Problematic Substance Use among Disengaged Profiles	51
Limitations	54
Implications for Future Research	56
Implications for Practice.....	57
Conclusion	60
Tables	62
Figures.....	73

DISSERTATION STUDY 2: DEVELOPMENTAL CHANGES IN THE RELATION BETWEEN OPPORTUNITY YOUTH STATUS AND MENTAL HEALTH DURING THE TRANSITION TO ADULTHOOD	76
Who are Opportunity Youth?	76
Opportunity Youth and Mental Health.....	79
The Role of Family Factors in Opportunity Youth Status and Mental Health	80
Developmental Considerations and Methodological Advantages	83
Research Questions	85
Method	86
Procedure	86
Participants	87
Measures	88
Mental Health	88
Opportunity Youth Status	89
Primary Source of Social Support	90
Demographic Characteristics and Covariates	91
Analytic Plan.....	92
Results.....	94
Descriptive Statistics and Preliminary Analyses	94
Results from CLPMs	94
Stability of Lagged Effects.....	94
Bidirectional Effects of OY Status and Mental Health.....	94

	Page
Strength of Paths Across Developmental Time	95
Family Social Support.....	96
Childhood SES	97
Covariate Direct Effects.....	97
Discussion	98
Bidirectional Associations between OY Status and Mental Health.....	100
Conceptualization of OY Status.....	104
Family Social Support for OY	105
SES, OY Status, and Mental Health.....	107
Limitations.....	108
Implications for Future Research.....	111
Implications for Practice.....	113
Conclusion.....	113
Tables	115
Figures.....	127
INTEGRATIVE DISCUSSION	128
REFERENCES.....	132

LIST OF TABLES

Table	Page
1. Descriptive Statistics for Demographics, Covariates, and Engagement Indicators.....	62
2. Model Fit Statistics for Latent Profile Analyses	64
3. Baseline Demographic, Risk and Protective Factors as Predictors of Modal Age 19/20 Profile Membership	65
4. Baseline Demographic, Risk and Protective Factors as Predictors of Modal Age 25/26 Profile Membership	67
5. Differences in Substance Use by Modal Age 19/20 Profile Membership	69
6. Differences in Substance Use by Modal Age 25/26 Profile Membership	71
7. Descriptive Statistics for Participants' Demographic Information.....	115
8. Descriptive Statistics and Correlations between Study Variables	116
9. Final Model Results with 'Any OY Status' Conceptualization	118
10. Final Model Results with '>3 month OY Status' Conceptualization.....	121
11. Final Model Results with 'Primarily OY Status' Conceptualization	124

LIST OF FIGURES

Figure	Page
1. Path Diagram of the Analytic Model Relating Latent Profiles to Substance Use	73
2. Engagement Indicators by Profile for Modal Age 19/20	74
3. Engagement Indicators by Profile for Modal Age 25/26	75
4. Path Diagram of the Cross-Lagged Panel Model Relating OY Status and Mental Health	127

Integrative Introduction

The transition from adolescence to young adulthood is a period of rapid changes in many domains of youths' lives, including transitions toward adult social roles in education and work (Settersten & Ray, 2010). These rapid changes also prime this period of life for turning points, which alter individuals' life course trajectories toward either more positive or more negative outcomes (Elder & Shanahan, 2007). Often, turning points are predicated on other social transitions; in life course theory the classic example is desistence from criminal activity following marriage, employment, and other transitions (Sampson & Laub, 2003). However, failure to complete normative social role transitions can also put youth at risk for future developmental problems, including poorer mental health and substance use. This risk may be compounded by disengagement from the important social institutions involved in the transition to adulthood (i.e., schools and employers; Havighurst, 1972).

From a developmental psychopathology perspective, the overarching constructs of internalizing and externalizing offer insight into youths' behavioral problems (Sroufe & Rutter, 1984). Among opportunity youth (OY), or youth ages 16- to 24- years old who are neither employed nor enrolled in school, these problems can be explained both as (a) internalizing problems as a result of disengagement (i.e., adaptive and maladaptive attempts to cope with distress related to disengagement) and (b) externalizing problems due to increased opportunity for engagement in risky or deviant behavior (i.e., not being formally connected to work or school means youth have more unstructured time to engage in risky behavior, like substance use). This dissertation is comprised of two studies that take developmental approaches to investigating associations between youth

disengagement and mental health and substance use, with specific emphasis on understanding the factors that put youth at risk for behavior problems and those that mitigate against this risk.

Theoretical Links between Youth Disengagement and Behavioral Health

One of the primary theoretical models explaining youths' internalizing problems, or the subgroup of developmental psychopathology that focuses on problems with mood and emotion, is the Cumulative/Simultaneous Events Model, which suggests that youths' coping resources can be overloaded by experiencing multiple or ill-timed transitions (Graber & Sontag, 2004). Disengagement from education or employment during the transition to adulthood can be conceptualized as transitions *out of* young adult role trajectories (or being "off-track") rather than *into* them, or potentially more appropriately as "non-events," or events that are expected to occur in a given developmental stage but do not materialize (Luhmann, Orth, Specht, Kandler, & Lucas, 2014). Although these non-events are rarely the focus of study among young adults, findings from older adulthood provide some evidence that non-events can negatively influence individuals' subjective wellbeing (Luhmann et al., 2014).

A further explanation of the behavioral health implications of disengagement involves externalizing problems, or the outward expression of behavior problems (Liu, 2004). Despite competing theoretical explanations regarding *why* some youth are at higher risk for delinquent behavior, both general strain theory (Agnew, 1992) and life-course developmental theory (Sampson & Laub, 2005) are helpful in understanding outcomes related to youth disengagement. General strain theory posits that failing to achieve "positively valued goals" influences negative affect, which can lead youth to

engage in delinquent behavior, like substance use, as a means of coping with their negative emotions (especially in circumstances of low social control; Agnew, 1992). Life-course developmental theory notes that the social institutions with which individuals are connected throughout the lifespan (e.g., schools, employment) provide forms of social control against delinquent behavior (Sampson & Laub, 2005). These normative social institutions of the transition to adulthood serve to provide monitoring, structure, routines, and the possibility of identity exploration (Sampson & Laub, 2005). Individuals who disengage from these institutions might have fewer opportunities for positive social control and, therefore, might be at higher risk for delinquent behavior.

Given that societal expectations for the transition to adulthood include completion of education and entry to the workforce, failure to do so might prove to be stressful in the lives of youth, potentially overloading their coping resources and leading to heightened internalizing symptoms or disorders (Graber & Sontag, 2004; Havighurst, 1972). Typical control strategies involved in coping include primary control, or efforts to change one's environment to meet the needs of the individual (e.g., moving away to pursue goals), and secondary control, or efforts to change oneself to meet the expectations of the environment (e.g., changing personal goals given opportunities [or lack thereof]), with primary control seen as preferred for long term adaptive functioning (Heckhausen & Schulz, 1993). Importantly, educational and employment disengagement involve not only intraindividual processes but also include the implications of systemic issues, like the school-to-prison pipeline for example (Mallett, 2016), and more generally including discrimination or disadvantage based on race/ethnicity, gender/gender identity, sexual orientation, and socioeconomic status. Disengagement might be a particularly pernicious

contributor to internalizing and externalizing problems for marginalized youth as these systemic issues are beyond individuals' use of primary control mechanisms. Thus, for some youth, disengagement might be more likely to overload coping resources or to lead youth to engage in externalizing behavior as an attempt to cope, which could be a result of secondary control mechanisms adapting to one's environment.

The Present Studies

The overarching aim of this dissertation, therefore, is to further investigate the mental health and substance use sequelae of educational and employment disengagement. This dissertation includes two studies: (a) one focusing on identifying and predicting (from risk and protective factors) subgroups of youth based on varying levels of educational and employment disengagement and their links to future problematic substance use and (b) another that utilizes several conceptualizations of OY status based on the amount of disengagement in a year as predictors of youths' mental health across the transition to adulthood, as well as the role of peer and family social support in this relationship.

Study 1 explores the link between youths' educational and employment disengagement and problematic substance use. This study capitalizes on the strengths of Monitoring the Future, a large, U.S. national sample of youth, with data collection ongoing since the 1970s. Using latent profile analysis, this study aims to determine distinct profiles of youth based on their educational and employment disengagement at two critical developmental transitions across the transition to adulthood, with the expectation that at least one subgroup representing OY would emerge at each time point. Differences in youths' substance use between subgroups are explored while accounting

for baseline risk and protective factors that could influence profile membership and substance use outcomes.

Study 2 takes a risk and resilience approach to exploring OY status and risk and protective factors associated with family experiences as predictors of mental health across the transition to adulthood. Specifically, this study uses a cross-lagged panel model to investigate the mutual influence of OY status and mental health. Additionally, childhood socioeconomic status and primary source of social support (family versus peer) were included as predictors and as moderators of the OY status → mental health relationship. This study addresses varying conceptualizations of OY status in terms of the threshold at which youth are considered OY by analyzing three models using status variables that represent three thresholds (i.e., ≥ 1 month, > 3 months, > 6 months). Importantly, this study addresses these associations across the transition to adulthood to determine whether there is a point at which youth are at particular risk for diminished mental health as a function of OY status and vice versa

This work is of critical public health importance as employment becomes increasingly precarious and postsecondary education becomes required for more career paths (Carnevale, Smith, & Strohl, 2010; Kalleberg, 2018); additionally, education and precarious employment have been identified as major social determinants of health (Benach et al., 2014). The effects of educational and employment disengagement during the transition to adulthood can last well beyond this period of life and can influence not only academic, employment, and economic outcomes but also social and health outcomes throughout the lifespan (Belfield, Levin, & Rosen, 2012). This dissertation serves to elucidate further risk and protective factors for youth who are disengaged from education

and/or employment, which can inform future intervention efforts to improve mental health and substance use outcomes. It also contributes to the ongoing broader discussion regarding the conceptualization of disengagement, as well as the directionality and extent to which disengagement is related to poorer mental health and problematic substance use.

Dissertation Study 1: Educational and Employment Disengagement as a Predictor of Substance Use across the Transition to Adulthood

Introduction

Prior research on youth who are disengaged from work and school has inconsistently measured the extent of youths' disengagement and has rarely considered whether differing conceptualizations of disengagement leads to different substantive conclusions about the effect of disengagement on substance use and mental health outcomes. This is even true regarding research on opportunity youth, who are often more narrowly defined as youth ages 16- to 24- years old who are neither in work nor school (Hilley, Lindstrom Johnson, Ferguson-Colvin, Infurna, & Jager, 2019). Thus, the purpose of the present study is to better understand configurations of educational and employment disengagement as predictors of substance use across the transition to adulthood. Specifically, this study explores whether subgroups of youth emerge based on their educational and employment disengagement at two developmentally relevant time points during the transition to adulthood and assesses the extent to which disengagement relates to higher binge drinking, marijuana use, and illicit drug use concurrently and longitudinally. This work is of critical public health importance, as youth who have disengaged from school and/or work have been found to experience economic and health problems at rates disproportionate to their peers who are consistently engaged (Mendelson, Mmari, Blum, Catalano, & Brindis, 2018). This study advances the extant literature in two important ways: (a) by empirically identifying latent profiles of disengagement versus relying on a priori assumptions and (b) by exploring the extent to

which membership in a profile characterized by disengagement influences concurrent and longitudinal problematic substance use among a national U.S. national sample.

Substance Use, the Transition to Adulthood, and Historical Context

During the transition to adulthood, adolescents experience rapid changes in many domains of life as they orient themselves toward adult social roles in the domains of educational attainment, employment status, independent residential status, relationships, and parenthood (Settersten, 2007; Settersten & Ray, 2010). Life course theory (Elder & Shanahan, 2007) suggests the importance of understanding normative trajectories of substance use during adolescence and young adulthood, which generally involves onset and escalation of substance use during adolescence, (typically) followed by declines in use during young adulthood as individuals transition into young adult roles (Schulenberg, Maslowsky, & Jager, 2018). For a subset of youth, earlier onset, quicker increases, or persistence of substance use beyond the transition to adulthood can place individuals at heightened risk for negative psychosocial outcomes later in life, including problematic or disordered substance use, poorer educational outcomes, and increased antisocial behavior (King & Chassin, 2007; Lynne-Landsman, Bradshaw, & Ialongo, 2010; Schulenberg et al., 2018).

Normative young adult social role transitions also introduce opportunities for turning points in substance use trajectories, both positively and negatively (Burt & Masten, 2010). Patterns of employment, academics, and parenthood have been shown to be related to differential trajectories in substance use for both women and men across the transition to adulthood (Oesterle, Hawkins, & Hill, 2011). Specifically, transitioning to adult social roles in the domains of work, school, and family has been documented as

being associated with lower substance use, except for temporary increases in heavy drinking during college (Paschall, Bersamin, & Flewelling, 2005; O'Malley & Johnston, 2002; Staff et al., 2010). Staff and colleagues (2010) found a similar pattern of results when investigating intraindividual change in substance use, indicating that the normative role transitions of young adulthood have the power to disrupt trajectories of substance use. This supports the hypothesis that adult roles serve to reduce individuals' substance use through a socializing rather than selection effect (Staff et al., 2010). That is, role transitions potentially serve causal roles in change in substance use as opposed to youth differentially selecting (or not) into roles based on their substance use.

However, this relationship has likely changed over time, as there is documented historical variation in both the timing of role transitions (Settersten & Ray, 2010; Shanahan, 2000; Furstenberg, 2010) and rates of adolescent and young adult substance use (Miech, et al., 2019; Schulenberg et al., 2019). Specifically, youth today experience longer, more variable transitions to adulthood (i.e., delayed adult role acquisition; Settersten & Ray, 2010) as well as delayed initiation, quicker increases, and slower decreases in binge drinking (based in part on historical variability in role acquisition and minimum legal drinking age; Jager et al., 2013; Jager, Keyes, & Schulenberg, 2015). Further, gender may play an important role in understanding these relationships, especially with respect to historical context. In recent decades, although the peak age of binge drinking has shifted forward for both women and men; gender differences in young adult binge drinking still exist in recent cohorts (i.e., peak binge drinking shifting from age 20 to 22 for women and age 21 to 23 for men), with trajectories converging around age 30 (Patrick et al., 2019).

Additionally, gender differences in adolescents' expectations about young adult role transitions have been found; boys expected later entries into work roles and egalitarian gender attitudes were related to later expected work entry, with this association being stronger for girls than boys (Crockett & Beal, 2012). This combined with later expected entries into parenthood for girls who have egalitarian gender attitudes suggests that as gender role attitudes have become more egalitarian over time, adolescents' (especially girls') expectations about work might have changed to reflect greater opportunity to pursue their academic and career goals prior to becoming parents (Crockett & Beal, 2012).

Additionally, both surveillance data (Schulenberg et al., 2019) and empirical research on substance use during the transition to adulthood have shown that these historical changes in substance use follow a pattern showing differences in substance use prevalence and behavior between youth categorized into three cohort groups based on the timing of their transition to adulthood (i.e., senior year of high school): mid-1970s to mid-1980s; mid-1980s to mid-1990s; and mid-1990s to mid-2000s (Jager et al., 2013; Jager et al., 2015; Patrick et al., 2019). Thus, the current study utilizes a conceptualization of historical time that allows for investigation of differences in engagement and in substance use across these cohort groups.

Risk Factors

Several behavioral, attitudinal, and contextual factors have been found to confer additional risk or to offer protection from increased substance use for disengaged youth. Specifically, both school truancy and adolescent substance use have been found to be related to increased substance use during the transition to adulthood as well as increased

likelihood of disengagement. For example, in a longitudinal study of primarily racial/ethnic minority youth, truancy was a significant concurrent and prospective predictor of substance use, and increases in truancy predicted increases in substance use (Henry & Thornberry, 2010). In multivariate analyses using data from a U.S. national sample, both truancy and adolescent alcohol use were associated with lower expectations of attending college (Barry, Chaney, & Chaney, 2011). Maggs and colleagues (2017) similarly found that late adolescents who frequently used marijuana were less likely than their peers who didn't use marijuana or used it infrequently to complete a college degree. These results support the notion that educational institutions play a role in limiting adolescents' substance use. Research regarding group differences in substance use among urban versus rural adolescents has been inconsistent, some finding that urban and rural youth use certain substances at differential rates (generally tobacco and alcohol more prevalent in rural areas, with varying findings regarding illicit drug use and marijuana; Coomber et al., 2011; Hanson et al., 2008; Rhew, Hawkins, & Oesterle, 2011) and others that there are no or small differences in substance use between urban and rural youth (Booth, Kirchner, Fortney, Ross, & Rost, 2000; Dixon & Chartier, 2016). Mixed findings regarding differences in urban and rural youth behaviors and psychosocial wellbeing are likely compounded by varying definitions of urbanicity and rurality across research and practice contexts (Johnson-Webb, Baer, & Gesler, 1997) as well as differing cultural norms and socioecological factors across regions (Hartley, 2004). Living situation has also been found to be related to substance use, but differentially so for college students and non-student young adults and not in a pattern that clearly elucidates a groups considered to be most at risk, as risk seems to vary across both educational status and

living situation for different substances. For example, college students living away from parents had the highest rates of alcohol use, but cigarette and cocaine use were highest among non-students regardless of living situation (Gfroerer, Greenblatt, & Wright, 1997). More generally, it is suggested that moving away from home is a risk factor for problematic young adult substance use, especially regarding alcohol among young adults who live with roommates (Stone, Becker, Huber, & Catalano, 2012).

Protective Factors

Both life satisfaction and positive future expectations have been linked to lower rates of substance use. Sipsma, Ickovics, Lin, and Kershaw (2012) used latent profile analyses to establish subgroups of youth based on their expectations for specific future activities; youth whose future expectations were primarily related to school were least likely to engage in substance use, while those youth in the subgroup of youth whose future expectations were primarily based on either drinking and arrests or a combination of drinking and school had the highest rates of substance use. Thus, the content of youths' expectations about specific future activities seem to differentially relate to substance use. This pattern of findings has also been supported among more specific populations (i.e., adjudicated adolescents, Black and Latino youth in Chicago, homeless youth), with future expectations and substance use being inversely related (Gomez, Thompson, & Barczyk, 2010; Prince, Epstein, Nurius, Gorman-Smith, & Henry, 2019; Robbins & Bryan, 2004). Additionally, adolescents' life satisfaction has been related to higher rates of substance use both concurrently across several race and gender groups (Zullig, Valois, Huebner, Oeltmann, & Drane, 2001) as well as prospectively, with adolescent substance use predicting lower life satisfaction later during the transition to

adulthood (Bogart, Collins, Ellickson, & Klein, 2007). More general delinquent behavior was found to mediate the relationship between life satisfaction and substance abuse among a sample of Malay youth (Mohamad, Mohammad, Mat Ali, & Awang, 2018). Together, these results suggest that potentially mutable intraindividual processes like life satisfaction and future expectations can serve an important role in preventing substance use. Thus, investigation of risk factors for substance use persistence and the protective factors that mitigate them is of public health importance. These mechanisms can be targeted for intervention to prevent the escalation of use (Villanti, Niaura, Abrams, & Mermelstein, 2019), even among groups that are at disproportionate risk for substance use overall, like opportunity youth.

Educational and Employment Disengagement during Young Adulthood

Two of the primary social role transitions that occur during the transition to adulthood in the U.S. are completion of secondary (and likely postsecondary) education, as well as the start of a career (Settersten, 2007). Youth who do not complete these societally-expected transitions during the relatively limited developmental period in which they are expected to occur (either at the individual or societal level) may experience distress related to the mismatch of their current activities (or lack thereof) and what they feel is expected of them (Havighurst, 1972; Shane & Heckhausen, 2019). Thus, youth who disengage from education and/or employment during the transition to adulthood might be at particular risk for developing psychosocial problems.

Opportunity youth are one specific group of adolescents and young adults who have in recent years gained the attention of policymakers, nonprofits, and researchers alike. Sometimes referred to as “disconnected youth,” a term which is disputed as having

negative connotations (Allen, Miles, & Steinberg, 2014), opportunity youth are, by definition, disengaged from school and work at a developmental time when societal expectations suggest they should be engaged. However, there is a lack of consensus regarding the exact degree of disengagement which qualifies youth as opportunity youth; in previous literature regarding the empirical association between opportunity youth status and substance use, a variety of conceptualizations of disengagement have been employed (Hilley et al., 2019).

Adding to the lack of consensus regarding conceptualizations of opportunity youth status is the role of socioeconomic status (SES) as an indicator of disengagement. By definition, opportunity youth are not earning their own income through employment, but youth from higher SES families may get material and financial support from their families at higher rates than their lower SES peers (Schoeni & Ross, 2005). Prior work to identify the characteristics of opportunity youth has shown that opportunity youth are more likely than their non-opportunity youth peers to experience poverty at some point during their disconnection (Brown & Emig, 1999) and to experience poverty concurrent with their disconnection regardless of whether they lived with their parents or alone (although even more so when living alone; Wight, Chau, Aratani, Schwarz, & Thampi, 2010). Further, many explanations for heightened risk for substance use and other risk behavior hinge upon the idea that youth who have more unstructured time (Hoeben, Meldrum, Walker, & Young, 2016). Although complex associations between unstructured socializing and substance use have been found throughout a host of empirical studies (see Hoeben, Meldrum, Walker, & Young, 2016), the youth disengagement literature has not yet considered time use as a central indicator of

disengagement. However, some associations described above, often studied in the context of out-of-school time, can be extended to youth who are disengaged from school and work.

Similarly, there are documented historical differences in the extent to which women have had access to and engaged in employment and education (Blossfeld, Skopek, Triventi, & Buchholz, 2015). Thus, over time women have had differential rates of unstructured time on average, and women with children are more likely to be disengaged as a result of their caretaking responsibilities (Molloy & Potter, 2015). Specific to the literature regarding the behavioral health of opportunity youth, homemaking status has often been included either as an indicator of disengagement or as a criterion by which to exclude participants from the study (Hilley et al., 2019). In one study of youth in Mexico City, homemakers were found to have lower rates of alcohol, illicit drug, and any drug use than their both their engaged and disengaged peers (Gutiérrez-García, Benjet, Borges, Ríos, & Medina-Mora, 2018).

Links between Disengagement and Substance Use

Although some level of substance use during adolescence can be considered developmentally normative, early initiation, heavy use, and the development of substance use disorders are associated with poorer clinical outcomes over the long run (Chassin, Hussong, & Beltran, 2009). From a developmental psychopathology perspective, problematic substance use can be explained as both a coping mechanism (i.e., internalizing) and as a form of delinquency (i.e., externalizing; Sroufe & Rutter, 1984). Being disengaged from the normative social institutions of the transition to adulthood might amplify the conceptual links for both explanations. That is, a lack of connection to

social institutions might mean youth have fewer resources to cope with personal problems (including those that stem from being disengaged) and lack the social control imposed by connection that often mitigates deviance and substance use.

In the only U.S.-based longitudinal study on the influence of disengagement on substance use, Lee and colleagues (2015) found that disengagement in a given year was associated with higher odds for heavy drinking in young adulthood and that this effect was exacerbated by having been in low SES families as children. Disengagement also predicted higher odds of young adult marijuana use but only for low SES children (Lee et al., 2015). Other cross-sectional and non-U.S. research provides additional empirical support documenting higher rates of substance use among disengaged youth across several types and indicators of substance use (e.g., Baggio et al., 2015; Hadar et al., 1996; Goldman-Mellor et al., 2016; Kovess-Masfety et al., 2016). This research has most frequently relied on unidimensional, binary conceptualizations of disengagement and on correlational approaches to analyze the relationship between opportunity youth status and substance use. To address these research gaps, the present study utilizes latent profile analysis to empirically identify subgroups of youth based on their levels of and type of disengagement, as well as exploring differences in substance use between youth in subgroups characterized by disengagement from work and school and those characterized by engagement.

Regarding the developmental nature of the effect of disengagement on substance use, two prior studies based on service-seeking samples (clinical and non-clinical) have considered the timing of disengagement as it relates to substance use outcomes: older Canadian opportunity youth had higher odds of risky substance use than their younger

peers (Henderson, Hawke, Chaim, & NYSPN, 2017), but among an Australian sample, odds of opportunity youth having substance use disorders were relatively similar between younger and older participants (Holloway et al., 2018). Together, these findings suggest that timing of disengagement might be particularly important to detect early problems with risky substance use but before they reach the level of substance use disorders; research is still needed regarding this relationship among community-based and U.S. samples.

Current Study

The overarching aim of the present study is to better understand the link between educational and employment disengagement and substance use across the transition to adulthood. In prior research, conceptualizations of opportunity youth status have primarily been based on researchers' determinations of binary categories (i.e., disengaged or not) and have rarely been approached in a way that explicitly considers developmental implications of opportunity youth status. Specifically, prior research on opportunity youths' behavioral health has conceptualized opportunity youth as being within a variety of age ranges (e.g., as low as 12 years old to as high as 35 years old), has considered opportunity youth status at different points throughout the year, and has differed in whether youth who are homemakers, parents, or in the military are considered opportunity youth (Hilley et al., 2019). In doing so, researchers often make subjective determinations regarding thresholds and categorizations about which youth are considered disengaged and which are not. Thus, a major strength of the present study is the ability to include many of the indicators mentioned previously in the analytic approach to determine whether profiles characterized by these indicators emerge. That is,

the present study uses the heterogeneity of engagement and disengagement indicators to its advantage rather than apply a priori assumptions about which indicators are weighed more or less than others in making a determination of whether or not participants are disconnected. Specifically, this study empirically identifies latent profiles of educational and employment disengagement at two developmentally relevant time points across the transition to adulthood, investigates risk and protective factors that predict membership in specific latent profiles, and explores the link between membership in these profiles and young adults' risky substance use while account for potential confounders (i.e., the risk and protective factors). Figure 1 shows a conceptual representation of the study's analyses, which were conducted in three parts corresponding to the three primary research questions.

Research question 1. *What profiles of educational and employment disengagement emerge? Do these profiles differ in late adolescence and young adulthood?* Traditional profiles of consistent engagement and disengagement were expected to emerge along with profiles of partial disengagement (e.g., unemployed in the prior year but currently working part-time). It was further expected that fewer participants would be completely or partially disengaged in young adulthood versus in adolescence.

Research question 2. *What risk and protective factors predict membership in latent profiles of partial and complete disengagement from educational and employment?* School truancy and substance use in adolescence were expected to predict higher rates of membership in profiles of complete and partial disengagement. Future expectations and

life satisfaction were expected to predict lower rates of membership in profiles of complete and partial disengagement.

Research question 3. *Does membership in latent profiles of disengagement from education and employment predict higher rates of risky substance use (binge drinking, marijuana use, illicit drug use) accounting for potential confounders?* Membership in profiles of complete or partial disengagement from work and school were expected to predict higher rates of substance use versus membership in profiles of complete engagement.

Method

Procedure

Data for the present study were drawn from the longitudinal panel of Monitoring the Future (MTF), an ongoing national study of substance use among adolescents and adults (Schulenberg et al., 2019). Between 12,000 and 19,000 12th grade students have been drawn from public and private schools across the United States each year since 1975 in a three-stage random sampling procedure: first selecting geographic areas, then selecting one or more schools within each area, and finally selecting classes in each selected school. Data were collected in school by trained interviewers (i.e., not school personnel) primarily during normal class times. Since 1976, a subset of each selected 12th grade class has been selected to be followed up as part of a continuing longitudinal study, which is conducted by mail or internet biennially (one random half in the year after high school and the other half in the subsequent year) through age 29 or 30, followed by additional waves (not utilized in the present study) collected in longer intervals. In this subset, participants who indicated they used marijuana or illicit substances at the first

round are oversampled to ensure adequate representation among young adults who use substances. Sample and attrition weights were used in analyses to account in part for this oversampling. The present study utilizes data from baseline (12th grade), follow up 1 (19 to 20 years old), follow up 4 (25 to 26 years old), and follow up 6 (29 to 30 years old) from all cohorts for whom data through age 30 years old are available (i.e., cohorts who were seniors in 1976 through those who were seniors in 2005), resulting in an unweighted sample size of 72,250.

Measures

Indicators of Disengagement and Related Context

Ten variables were measured regarding participants' disengagement from education and employment, as well as characteristics related to youths' context and time use beyond work/school engagement. Education was captured using three binary items regarding current enrollment in types of educational programs (i.e., vocational or technical school, 2-year degree, and 4-year or graduate/professional degree) and one ordered categorical item regarding the extent of enrollment (i.e., *none, less than half-time, about half-time or more, and full time*). Employment was captured using two variables reflecting recent and current employment. Participants provided information about the number of jobs and type of employment they held in March of the interview year; one categorical item captured number of jobs (*two or more different jobs, one full-time job, one part-time job, laid-off or waiting to start job, no paid employment*), and two binary items indicated participants' primary role types (i.e., military, homemaking). Participants also provided their unemployment history for the prior calendar year (i.e., "how many weeks were you unemployed AND looking for work, or on lay-off from a

job?”), with response options including *none*, *1-2 weeks*, *3-4 weeks*, *5-9 weeks*, *10-14 weeks*, *15-20 weeks*, *21-26 weeks*, and *27 or more weeks*. Participants were also asked several questions regarding the context surrounding their disconnection (i.e., recreation, SES). Recreation was measured with the item, “During a typical week, on how many evenings do you go out for fun and recreation?” and response options including *less than one*, *one*, *two*, *three*, *four or five*, and *six or seven*. The family of origin’s socioeconomic status (SES) was measured using an average of mothers’ and fathers’ highest level of education completed, ranging from *Completed Grade School or Less* to *Graduate or Professional School after College*.

Demographic, Risk and Protective Factors

Several covariates were measured at the participant, family, and contextual levels to both serve as predictors of latent profiles as well as to account for confounding in the relationship between latent profiles and risky substance use. Gender and race/ethnicity were included as demographic covariates. Additional individual-level covariates include school truancy, life satisfaction, future expectations, and early substance use, each measured at baseline when youth were in 12th grade. High school truancy was measured by asking “how many whole days of school [participants] skipped or cut,” with response options including *none*, *1 day*, *2 days*, *3 days*, *4-5 days*, *6-10 days*, and *11 or more days*. Life satisfaction was measured using the item, “How satisfied are you with your life as a whole these days?” and response options on a 7-point scale ranging from *Completely Dissatisfied* to *Completely Satisfied*. Future expectations were measured using youths’ responses to items regarding their expectations about future military service, technical or career training, and 2- or 4- year college or graduate/professional school, with response

options on a 4-point scale ranging from *Definitely Won't* to *Definitely Will*; the item for which youth reported highest expectations was taken as their score on this variable.

Adolescent substance use was measured at baseline using three items regarding having ever smoked cigarettes, drank alcohol, or used marijuana or hashish; a binary variable indicating any adolescent substance use was computed from these three items, as the primary purpose of including this variable in the present study was to understand individual differences in profile membership rather than understanding how specific substances impact profile membership.

Additional contextual covariates include historical time, living situation, and urbanicity. Historical time was coded into three cohort groups based on the year in which participants were seniors in high school: 1976 to 1985, 1986 to 1995, or 1996 to 2005. This conceptualization is consistent with historical changes in substance use based on findings from surveillance data (Miech et al., 2019) and prior empirical research on historical changes in substance use. Living situation and urbanicity were each measured in 12th grade; living situation was represented by a binary variable indicating residence with a non-relative, and urbanicity was coded 0 (*rural; on a farm, in the country, or in a small city with a population of less than 50,000*) or 1 (*urban; medium-sized city with population of 50,000 or greater*), respectively.

Substance Use Outcomes

Three self-reported substance use outcomes were measured concurrently with indicators of disengagement described above (i.e., at modal ages 19/20 and 25/26) as well as longitudinally (i.e., at modal ages 25/26 and 29/30, respectively). Binge drinking was operationalized as five or more drinks in a row in the past two weeks and was measured

using a single item. Response options for the binge drinking item were 1 (*never*), 2 (*once*), 3 (*twice*), 4 (*3–5 times*), 5 (*6–9 times*), and 6 (*10 or more times*). Marijuana use was operationalized as use of marijuana or hashish in the past 30 days and was measured using a single item. Response options for the marijuana use item were 1 (*0 occasions*), 2 (*1-2 occasions*), 3 (*3-5 occasions*), 4 (*6-9 occasions*), 5 (*10-19 occasions*), 6 (*20-39 occasions*), and 7 (*40 or more*). Consistent with Monitoring the Future’s surveillance of illicit drug use and because illicit use of substances other than marijuana has declined among young adults in recent decades (Schulenberg et al., 2019), this variable was dichotomized as any lifetime use of illicit drugs other than marijuana (non-prescription or over-the-counter), including LSD, hallucinogens, cocaine, amphetamines, sedatives, tranquilizers, heroin, and other narcotics, which were all asked as separate items and included common brand names and slang terms within the item prompts. Participants were asked on how many occasions they had used each substance (*once, twice, 3 to 5 times, 6 to 9 times, 10 or more times*), and these items were combined to create binary variables coded 0 (*no lifetime illicit drug use*) and 1 (*any lifetime illicit drug use*).

Analytic Strategy

Patterns of educational and employment disengagement across individuals were established using latent profile analysis (LPA; Collins & Lanza, 2010). LPA is a type of finite mixture model used to identify latent subgroups (or “profiles”) in the population, thereby categorizing individuals based on a set of indicators into profiles in which they are similar to other individuals in the same profile (Lanza, Tan, & Bray, 2013). The ten measures of engagement and related circumstances described previously were included as indicators of the latent profiles. Gender was included as a covariate in the LCA model

estimation as gender differences in the school-to-work transition and historical changes in these gender differences are well documented (Blossfeld, Skopek, Triventi, & Buchholz, 2015); thus, because the present study utilizes engagement data spanning three decades, it was important for gender to influence profile composition to ensure profiles highly related to gender (e.g., homemaking) were adequately represented in the estimation of profiles.

The final latent profile model was selected using simultaneous inspection of empirical fit indices and the substantive and theoretical interpretability of each profile. Specifically, several models were estimated, each with an increasing number of profiles. A set of model fit indices was then used for comparison purposes to aid in selecting the appropriate model, including: Akaike Information Criterion (AIC; Akaike, 1987), Bayesian Information Criterion (BIC; Schwarz, 1978), Adjusted BIC (Sclove, 1987), Lo-Mendell-Rubin Likelihood Ratio Test (LMR-LRT; Lo, Mendell, & Rubin, 2001), and Adjusted LMR-LRT. Better fitting models are indicated by lower AIC, BIC, and Adjusted BIC, as well as the last significant p -value in the series of successive likelihood ratio tests. Likelihood ratio tests assess improvement in model fit for nested models by comparing models with k profiles with a model with $k-1$ profiles (Nylund, Asparouhov, & Muthén, 2007). Mplus version 8.4 (Muthén & Muthén, 2019) was used to estimate the models.

The relation of latent profile membership to baseline demographic, risk, and protective factors as well as to concurrent and distal substance use outcomes were using 3-step approaches (Vermunt, 2010). Three-step approaches proceed in the following fashion: (a) latent profiles are estimated, (b) participants are assigned to classes based on

the posterior probabilities of their membership to specific profiles, and (c) analyses are conducted to relate latent profile membership to predictors or outcomes. The 3-step approaches represent an improvement over prior methods of including covariates in mixture models as they avoid changing the composition of the latent profiles established in the first step while still accounting for classification error (Vermunt, 2010). In the third step, the automatic multinomial latent class logistic regression procedure and manual procedure for measurement-error weighted multiple group analyses were implemented (referred to in the Mplus software as R3STEP and manual BCH, respectively; Asparouhov & Muthén, 2020). Maximum likelihood estimation with standard errors that are robust to non-normality (MLR) was used in all analyses to account for non-normality and missing data when possible. The R3STEP procedure applies listwise deletion as modern methods for addressing missing data assume participants come from a single population, which is inconsistent with the purpose of mixture models categorize participants into sub-populations (Enders & Gottschall, 2011; Muthén & Muthén, 2019). Applying such missing data approaches in the context of mixture models has been shown to bias parameter estimates (Enders & Gottschall, 2011). All analyses were weighted to adjust for the oversampling of substance users in the MTF design to ensure adequate numbers of participants who use substances in follow up analyses (Schulenberg et al., 2019).

Results

Descriptive Statistics and Preliminary Analyses

Weighted descriptive statistics for participants demographics, covariates, and engagement indicators can be found in Table 1. In the weighted sample, slightly more

than half of participants were female (52.3%); the racial/ethnic composition of the sample was primarily White (73.5%), followed by Black (12.2%), Hispanic (7.4%), Asian (2.8%), and other race/ethnicity (4.2%). Participants were equally split between living in urban (49.6%) and non-urban areas; 3.6% of participants lived with someone other than a relative. Most participants (87.9%) had engaged in some substance use in adolescence. On average, participants skipped school none or once, were “somewhat” satisfied with life as a whole (about one point above neutral) and had high expectations for at least one future educational or vocational pursuit.

Latent Profile Model Selection

To determine the appropriate latent profile model solution, models were analyzed successively increasing the number of profiles estimated. For each age group, models with one to seven profiles were estimated and compared using fit indices and substantive interpretability to select the two final profile solutions (i.e., at modal ages 19/20 and 25/26). Models with more than seven profiles did not replicate the loglikelihood using many sets of random starting values (in both age groups); these models were not considered as estimates are likely to be untrustworthy due to the potential for local solutions. Each model’s fit indices are available in Table 2. As recommended by methodological researchers of mixture models (Muthén, 2003; Nylund-Gibson & Choi, 2018), the substantive and theoretical interpretability of each profile solution was examined to select the final models alongside empirical indicator of model fit indices and likelihood ratio tests, which were consistently significant in the models tested. At both time points, the six-profile model was selected as they exhibited improved model fit over models with fewer profiles, and the addition of the seventh profiles did not improve

substantive interpretability (i.e., created another profile that was not substantially different on the pattern of indicators than other profiles already represented).

Engagement by Profile at Modal Ages 19/20 and 25/26

Means of continuous variables and proportions of participants endorsing categorical engagement indicators are presented by profile in Figures 2 and 3 for modal ages 19/20 and 25/26, respectively.

At modal ages 19/20, most profiles were substantively similar regarding SES despite several significant differences; the student profile in which most participants were in 4-year college or above had the highest average SES and the working profile had the lowest average SES, both of which were significantly different from all other profiles. Each of the profiles characterized by disengagement were also significantly but not substantively different from each other on SES. With the exception of comparisons between student and working profiles, all comparisons between profiles were significantly different regarding prior unemployment, with the most substantial differences between the three profiles characterized by disengagement. Several significant but not substantive differences were found on recreation.

Profiles separated into two student profiles, one which was primarily students in 2 year colleges or vocational/technical training programs, both indicators which were significantly highest within this profile, and one which was primarily students in 4 year colleges or above, the indicator for which was significantly highest for this profile. Other profile differences for these three education type indicators existed but did not substantively separate profiles characterized by disengagement. Additionally, the two student profiles had highest rates of full time enrollment, and the profile representing

students in 2 year colleges or vocational/technical training programs also had highest rates of about half-time enrollment. The profile characterized by disengagement which had the lowest prior unemployment also had significantly lower rates of no enrollment than the other two profiles characterized by disengagement. Most profiles were significantly different from each other regarding their employment type, with the participants in a working profile having highest rates of one full-time job, students in 2-year or vocational/technical training having highest rates of one part-time job, and students in 4-year colleges and one profile characterized by disengagement having highest rates of no paid employment. Military status was only significantly different in distinguishing student profiles (but not from each other), working, and profiles characterized by engagement (but not from each other). Homemaking also exhibited significant differences between profiles characterized by engagement, and between the profile with highest unemployment and the two other profiles characterized by disengagement.

As shown above, profiles were primarily distinguishable regarding differences in educational enrollment status and type, employment status, and prior year unemployment status, but not on military or homemaking roles, recreation, and SES. Thus, profiles at modal age 19/20, were named as follows based on both significant quantitative differences as well as substantive differences: Profile 1 was termed *VT/2Y Students*, as most participants were taking classes full time at a vocational/technical school or 2-year college; most of these participants also worked a part-time or full-time job. Profile 2 was labeled *Working*, as participants were primarily not taking classes and were working one part-time or full-time job or multiple jobs and reported low prior unemployment; the

largest proportion of military servicepeople were captured in this class but did not represent a majority. Profile 3 was categorized as *Half Students + Slightly Higher Unemployment*, as about half of the participants in this profile were not enrolled in classes, a quarter reported having no employment, and on average participants reported unemployment slightly higher (between 3-4 and 5-9 weeks in the prior year) than the total sample but not the highest by profile. Profile 4 was labeled *4Y+ Students*, as participants in this profile were almost exclusively enrolled full time in a 4-year college or higher; about half of participants also worked, primarily in a part-time job, and participants in this profile had the highest average socioeconomic status. Profile 5 was termed *Half Students + Higher Unemployment* as participants were similar regarding education and employment engagement as those in Profile 3 except regarding unemployment, on which Profile 5 was substantially higher (between 10-14 weeks and 15-20 weeks in the prior year). Profile 6 was categorized as *Half Students + Highest Unemployment*, as participants in this class were around half students and less than half were employed; participants in this profile also reported the highest average prior unemployment at more than 21 weeks in the prior year. Overall, 78.3% of participants were categorized into the three profiles characterized by primary status in work or school, and 20.7% of participants were categorized into the three profiles characterized by a higher likelihood of disengagement due to lower rates of school and work and higher rates of prior unemployment.

At modal ages 25/26, most profiles were substantively similar regarding SES despite several significant differences; the student profile had the highest average SES and the homemakers profile had the lowest average SES, both of which were

significantly different from all other profiles. Each of the profiles characterized by disengagement were also significantly but not substantively different from each other on SES. With the exception of comparisons between student and working profiles, all comparisons between profiles were significantly different regarding prior unemployment, with the most substantial differences between the three profiles characterized by disengagement. Several significant but not substantive differences were found on recreation, with the exception of the homemakers profile having the lowest recreation.

At modal ages 25/26 students were represented by one profile, which had highest rates of all enrollment statuses (full time, about half time or more, and less than half time). The profiles characterized by disengagement were not significantly different from each other regarding enrollment statuses. Participants in the student profile also endorsed the highest rates of all three education types (vocational/technical training programs, 2 year colleges, and 4 year colleges or above). Other profile differences for these three education type indicators existed but did not substantively separate profiles characterized by disengagement. Most profiles were significantly different from each other regarding their employment type, with the participants in a working profile having highest rates of one full-time job, followed by a profile which constituted mostly workers but with high prior unemployment; students reported having highest rates of one part-time job. Homemakers, by definition, reported no paid employment, and other profiles reporting no paid employment were primarily the profiles characterized by disengagement (as well as students) but to varying extents. Military status was represented significantly but not substantively higher in student and working profiles, as well as between several profiles characterized by disengagement. Homemaking also exhibited significant differences

primarily when compared to the profile in which three-quarters of participants were homemakers, followed by the three profiles characterized by disengagement.

Thus, profiles at modal age 25/26 were broadly distinguishable by similar characteristics as those reported for modal age 19/20 (educational enrollment status and type, employment status, and prior year unemployment status, but not on military status, recreation, and SES, again except for profiles primarily consisting of the student profile, which had the highest SES), with the addition of homemaking as a primary indicator of disengagement. Profiles at modal age 25/26 were, therefore, named as follows: Profile 1 was termed *Homemakers*, as nearly all participants in this profile were not working or in school, and the majority were homemakers. Profile 2 was labeled *Students*, as only 4% were not enrolled in classes; participants in this profile were primarily enrolled at 4-year colleges or higher, but some were enrolled in 2-year college or technical/vocational schools, and almost 80% also held some type of employment; participants in this profile also reported the highest average SES. Profile 3 was characterized as *Low Work/School + Higher Unemployment*, as almost a quarter of participants in this profile reported no employment and only 10.3% were taking classes; on average, participants in this profile reported between 10-14 and 15-20 weeks of unemployment in the prior year. Profile 4 was labeled *Working + High Prior Unemployment*, as 85.5% of participants in this profile reported some work and most (80.9%) were not taking classes; participants in this profile also reported higher than average rates of prior unemployment (between 3-4 and 5-9 weeks in the prior year), but not the highest of all profiles for modal age 25/26. Profile 5 was termed *Working*, as participants were almost exclusively working (most in full-time jobs) and the few who were taking classes were doing so part-time; participants

in this profile also reported almost no unemployment in the prior year. Profile 6 was named *Half Working/Low School + Highest Unemployment*, as almost 80% of participants in this profile were not taking classes, almost half reported no employment and one third reported having one full time job; of the profiles at modal age 25/26, participants in this profile reported the highest average unemployment of more than 21 weeks in the prior year. Overall, 91.6% of participants were categorized into the three profiles characterized by primary statuses in work or school, 2.8% were in *Homemaking* profile, and 5.6% of participants were categorized into the three profiles characterized by a higher likelihood of disengagement due to lower rates of school and work and higher rates of prior unemployment.

Baseline Covariates as Predictors of Latent Profile Membership

Gender was included as a covariate in the model-building process and, therefore, are reported here rather than in the multinomial logistic regression results from R3STEP process below. Gender was a significant predictor of modal age 19/20 profile membership such that females were more likely to be in the *Half Students + Highest Unemployment* profile than in other profiles characterized by engagement or disengagement (*Bs* range: -0.318 – 0.104; *ps* range: < .001 – .012). Gender also significantly predicted profile membership at modal age 25/26 such that females were more likely to be in the *Homemakers* profile than in the *Half Working/Low School + Highest Unemployment* ($B = 3.681, p < .0010$, and less likely to be in profiles other than the *Half Working/Low School + Highest Unemployment* profile (*Bs* range: -0.303 – -0.211; *ps* < .001). Results from multinomial logistic regression analyses of other

demographic characteristics and baseline risk and protective factors as predictors of profile membership are provided in Tables 3 and 4.

Predictors of Modal Age 19/20 Profile Membership

Black participants were more likely to be in the *Working* profile or profiles characterized by disengagement (i.e., the three *Half Students* profiles with varying prior unemployment) than in either of the students classes at modal age 19/20. However, Black participants were less likely to be in the *Half Students + Slightly Higher Unemployment* or *Half Students + Higher Unemployment* profiles but more likely to be in the *Half Students + Highest Unemployment* profile than in the *Working* profile. Hispanic participants exhibited a more variable pattern of likelihood dependent upon the referent profile. Compared to the two student profiles, Hispanic participants were generally more likely to be in one of the profiles characterized by disengagement, with the exception of a lower likelihood of being in the *Half Students + Slightly Higher Unemployment* profile when compared to *VT/2Y Students*. However, in reference to the *Working* profile, Hispanic participants were less likely to be in any of the disengagement profiles (i.e., more likely to be working). Across most parameterizations, Asian participants were more likely to be in one of the profiles characterized by disengagement, with the exception of comparisons between the two student profiles and both the *Half Students + Slightly Higher Unemployment* and *Half Students + Higher Unemployment* profiles, which were nonsignificant. Participants who were other races or ethnicities were generally more likely to be in one of the profiles characterized by disengagement than in either of the two student profiles (except when comparing the *Half Students + Slightly Higher Unemployment* profile with *2Y/VT Students*, which was nonsignificant); in reference to

the *Working* profile, participants of other races or ethnicities were less likely to be in the *Half Students + Slightly Higher Unemployment* profile (i.e., more likely to be working) but there were no significant differences in likelihood of being in the other two profiles characterized by disengagement. Comparing across profiles characterized by disengagement, Black, Hispanic, Asian and other race/ethnicity participants were also differentially likely to be in any of the profiles characterized by disengagement such that they were more likely to be in the *Half Students + Higher Unemployment* (except a non-significant estimate for Asian participants) or *Half Students + Highest Unemployment* than in the *Half Students + Slightly Higher Unemployment* and more likely to be in the *Half Students + Highest Unemployment* profile than the *Half Students + Higher Unemployment*.

In reference to the two student profiles, participants living in urban areas were less likely to be disengaged (i.e., more likely to be students) than their counterparts in non-urban areas with the exception of the *Half Students + Slightly Higher Unemployment* when compared to *2Y/VT Students*, which was non-significant. In reference to the *Working* profile, however, urban participants were more likely to be in any of the three profiles characterized by disengagement than *Working*. Comparing between profiles characterized by disengagement, urbanicity generally predicted lower membership in the two profiles with the highest prior unemployment in reference to *Half Students + Slightly Higher Unemployment* but no difference in likelihood between the two highest prior unemployment profiles. In reference to the two student profiles, living with non-relatives predicted higher likelihood of being in the *Half Students + Higher Unemployment* and *Half Students + Highest Unemployment* profiles but no difference for the *Half Students +*

Slightly Higher Unemployment profile. In reference to *Working*, living with non-relatives predicted lower likelihood of being in the *Half Students + Slightly Higher Unemployment* profile but no significant differences in likelihood of being in the other two profiles characterized by disengagement. Comparing among the three profiles characterized by disengagement, living with non-relatives generally predicted lower membership in the two profiles with the highest prior unemployment in reference to *Half Students + Slightly Higher Unemployment* but no difference in likelihood between the two highest prior unemployment profiles. Participants in earlier cohorts (i.e., seniors between 1976 and 1985) were more likely than recent cohorts (i.e., seniors between 1996 and 2005) to be in one of the three profiles characterized by disengagement than one of the three characterized by engagement in work or school. Participants in middle cohorts (i.e., seniors between 1986 and 1995) were more likely than recent cohorts to be in one of the profiles characterized by disengagement than in the *4Y+ Students* profile; they were also more likely to be in the *Half Students + Slightly Higher Unemployment* or *Half Students + Highest Unemployment* profiles than in the *Working* profile but did not have significantly different likelihood of being in the *Half Students + Higher Unemployment* profile. Being in middle cohorts also did not significantly predict membership in profiles characterized by disengagement in reference to the *2Y/VT Students* profile or when comparing across profiles characterized by disengagement; however, earlier cohorts were more likely to be in the *Half Students + Highest Unemployment* profile than the other two *Half Students* profiles with lower unemployment.

Adolescent substance use significantly predicted profile membership only when comparing other profiles to the *Working* profile such that adolescents who used had a

lower likelihood of being in the *Half Students + Slightly Higher Unemployment* or *Half Students + Highest Unemployment* and no significant difference between *Working* and the *Half Students + Higher Unemployment* profile or between the profiles characterized by disengagement. School truancy predicted greater likelihood of being in one of the profiles characterized by disengagement than in the student profiles with the exception of the *Half Students + Highest Unemployment* profile in reference to *2Y/VT Students*, which was not significant. However, truancy predicted lower likelihood of being in one of the profiles characterized by disengagement in reference to the *Working* profile. Comparing between profiles characterized by disengagement, truancy only predicted differences between *Half Students + Higher Unemployment* and *Half Students + Highest Unemployment* the profiles with highest prior unemployment, such that the truancy predicted more likely membership in the former. Higher life satisfaction predicted of lower likelihood of being in any profile characterized by disengagement in reference to the two student profiles; in reference to the *Working* profile, life satisfaction was a significant predictor only of lower likelihood of being in the *Half Students + Highest Unemployment* profile. Life satisfaction did not significantly predict differential likelihood of being in one of the profiles characterized by disengagement compared with each other. Higher future expectations predicted lower likelihood of being in any of the profiles characterized by disengagement in reference to either of the student profiles, but higher likelihood of being in any of the profiles characterized by disengagement in reference to the *Working* profile. Higher future expectations also predicted lower likelihood of being in the two higher unemployment *Half Student* profiles when

compared to *Half Students + Slightly Higher Unemployment*, but no difference between the two former profiles.

Predictors of Modal Age 25/26 Profile Membership

Black participants were more likely to be in one of the three profiles characterized by disengagement (*Low Work/School + Higher Unemployment*, *Low Work/School + Highest Unemployment*, or *Working + High Prior Unemployment*) or in the *Working* profile than in the *Students* profile, as well as more likely to be in one of the three profiles characterized by disengagement or *Homemakers* than in the *Working* profile. Between the three profiles characterized by disengagement, Black participants were more likely to be in the *Half Working/Low School + Highest Unemployment* profile than the *Low Work/School + Higher Unemployment* or *Working + High Prior Unemployment* profiles and less likely to be in the *Working + High Prior Unemployment* profile than the *Low Work/School + Higher Unemployment* profile. Hispanic participants were more likely to be in the *Low Work/School + Higher Unemployment*, *Low Work/School + Highest Unemployment*, or *Working* profiles than the *Students* profile, but no difference between the *Working + High Prior Unemployment* profile. Hispanic participants were also more likely to be in the *Homemakers* profile only when compared to *Working* or *Low Work/School + Highest Unemployment*. When comparing the three profiles characterized by disengagement, Hispanic participants were more likely to be in the *Half Working/Low School + Highest Unemployment* profile than the *Low Work/School + Higher Unemployment* or *Working + High Prior Unemployment* profiles but not differentially likely to be in the *Working + High Prior Unemployment* profile versus the *Low Work/School + Higher Unemployment* profile. Asian participants were not differentially

likely to be in one of the profiles characterized by disengagement than in the *Students* profile and were more likely to be in one of the profiles characterized by disengagement than in the *Working* profile; Asian participants were also more likely to be in the *Students* profile or one of the profiles characterized by disengagement than in the *Homemakers* profile. Asian participants were not differentially likely to be in one of the three profiles characterized by disengagement when compared to each other. Participants of other races/ethnicities were more likely to be either the *Low Work/School + Higher Unemployment* or *Low Work/School + Highest Unemployment* profiles than in the *Students* or *Homemakers* profiles and were not found to be differentially likely to be in any profile characterized by disengagement or in the *Homemakers* profile when compared to *Working* or when comparing across the profiles characterized by disengagement.

Living with non-relatives predicted higher likelihood of being *Homemakers* when compared to the *Students* and *Working* profiles, as well as lower likelihood of being in the *Low Work/School + Highest Unemployment* when compared to the *Students* and *Working + High Prior Unemployment* profiles. Participants in earlier cohorts (i.e., seniors between 1976 and 1985) and middle cohorts (i.e., seniors between 1986 and 1995) were more likely than recent cohorts (i.e., seniors between 1996 and 2005) to be *Homemakers* across the board. Earlier cohorts were also more likely to be in any of the three profiles characterized by disengagement when compared to the *Students* or *Working* profiles. Middle cohorts were less likely than recent cohorts to be in the *Low Work/School + Highest Unemployment* profile when compared to the *Students* or *Working* profiles. In general, cohort did not predict likelihood of being in one of the

profiles characterized by disengagement when compared to each other, with the exception of the middle cohort being less likely to be in the *Low Work/School + Highest Unemployment* profile when compared to the *Working + High Prior Unemployment* profile.

Adolescent substance use predicted lower likelihood of being in any other profile characterized primarily by disengagement or in the *Homemakers* profile when compared to the *Working* profile, as well as lower likelihood of being in the *Low Work/School + Higher Unemployment* or *Homemakers* profile when compared to the *Students* profile (other *Homemakers* comparisons were nonsignificant). School truancy predicted higher likelihood of being in the *Low Work/School + Higher Unemployment* or *Working + High Prior Unemployment* profiles when compared to the *Students* profile and higher likelihood of being in the *Homemakers* or *Low Work/School + Highest Unemployment* when compared to the *Working* profile. Neither adolescent substance use nor school truancy significantly predicted differential membership when comparing among profiles primarily characterized by disengagement. Participants with higher life satisfaction were less likely to be in any of the profiles characterized by disengagement when compared to the *Students* profile, not differentially likely to be *Homemakers* when compared to *Students* or *Working* profiles, and less likely to be in any of the profiles characterized by disengagement when compared to the *Working* profile. Comparing between profiles characterized by disengagement, life satisfaction was a significant predictor only of lower likelihood of being in the *Low Work/School + Highest Unemployment* profile when compared to the *Working + High Prior Unemployment* profile. Participants with higher future expectations were less likely to be in any of the profiles characterized by

disengagement when compared to the *Students* profile, less likely to be *Homemakers* when compared to *Students* or *Working* profiles, and less likely to be in the *Low Work/School + Highest Unemployment* profile when compared to the *Working* profile, but other comparisons between profiles primarily characterized by engagement versus disengagement and between profiles characterized by disengagement were not significant.

Differences in Substance Use by Profile

Results from measurement-error weighted multiple group analyses comparing profiles on their substance use are provided in Tables 5 and 6.

Modal Age 19/20 Substance Use Differences

Compared with *VT/2Y Students*, participants in all three profiles characterized by disengagement exhibited higher rates of marijuana use and illicit use concurrently and longitudinally in both adjusted and unadjusted analyses. Participants who were in either the *Half Students + Slightly Higher Unemployment* or *Half Students + Higher Unemployment* profiles also exhibited higher rates of binge drinking than *VT/2Y Students*, but this association was non-significant in adjusted analyses for the *Half Students + Slightly Higher Unemployment* versus *VT/2Y Students* comparison. There was no significant difference in concurrent or longitudinal binge drinking when comparing the *Half Students + Highest Unemployment* profile with *VT/2Y Students*, except for higher concurrent use in adjusted analyses. A similar pattern of marijuana and illicit use emerged when comparing the three disengaged profiles with *4Y+ Students*: participants in the profiles engaged characterized by disengagement exhibited more marijuana use and illicit use than *4Y+ Students* concurrently and longitudinally in both adjusted and

unadjusted analyses. However, binge drinking was generally higher among *4Y+ Students* than the three profiles characterized by disengagement (except for a non-significant comparison of longitudinal binge drinking when comparing the *Half Students + Higher Unemployment* and *4Y+ Students* profiles).

When comparing the profiles characterized by disengagement with participants in the *Working* profile, the direction of differences were mostly consistent but profiles characterized by disengagement tended to be more similar to the *Working* profile (i.e., fewer significant differences, especially in unadjusted analyses) than with the student profiles reported previously. Marijuana use was generally higher among the profiles characterized by disengagement than the *Working* or two student profiles, especially in adjusted models (with the exception of the adjusted comparison between the *Half Students + Highest Unemployment* and *Working*, which was non-significant); in unadjusted models concurrent use was higher for the *Half Students + Slightly Higher Unemployment* or *Half Students + Higher Unemployment* profiles but not *Half Students + Highest Unemployment*, and longitudinal use was higher only for the *Half Students + Higher Unemployment* profile. In adjusted models, binge drinking was also higher among all profiles characterized by disengagement than the *Working* profile; in unadjusted models, there was no significant difference in binge drinking between the *Half Students + Slightly Higher Unemployment* profile, higher binge drinking only for longitudinal use for the *Half Students + Higher Unemployment* profile, and lower binge drinking among the *Half Students + Highest Unemployment* profile. There was no significant difference between concurrent or longitudinal illicit use between the *Half Students + Slightly Higher Unemployment* or *Half Students + Higher Unemployment* profiles and the *Working*

profile in unadjusted models but higher use among the former two profiles in adjusted models, as well as lower concurrent and longitudinal illicit use among the *Half Students + Highest Unemployment* profile but only in unadjusted models.

Comparing between the three profiles characterized by disengagement, no differences in any concurrent or longitudinal substance use were found between the *Half Students + Slightly Higher Unemployment* and *Half Students + Higher Unemployment* profiles in either unadjusted or adjusted analyses. Participants in the *Half Students + Slightly Higher Unemployment* and *Half Students + Higher Unemployment* profiles had consistently higher marijuana use and illicit use than those in the *Half Students + Highest Unemployment* across all unadjusted and adjusted comparisons, as well as higher concurrent and longitudinal binge drinking in unadjusted comparisons. However, in adjusted analyses, *Half Students + Slightly Higher Unemployment* had higher binge drinking than *Half Students + Highest Unemployment*, but *Half Students + Higher Unemployment* had lower binge drinking than *Half Students + Highest Unemployment*, and neither adjusted longitudinal binge drinking comparison between groups was significant.

Modal Age 25/26 Substance Use Differences

Participants classified as *Low Work/School + Higher Unemployment* had higher rates of concurrent and longitudinal marijuana use and illicit use compared to participants who were *Working* in unadjusted and adjusted analyses but no significant differences in binge drinking. *Half Working/Low School + Highest Unemployment* participants also had higher rates of concurrent and longitudinal marijuana use compared to participants who were *Working*, but had lower binge drinking (in adjusted and unadjusted analyses for

concurrent use but only unadjusted analyses for longitudinal use) and higher illicit use (again in both analyses for concurrent use but only in unadjusted analyses for bivariate use).

Compared to participants who were *Students*, participants in all three profiles characterized by disengagement had higher rates of marijuana use in adjusted and unadjusted analyses. Participants in the profiles characterized by disengagement also had higher illicit use than *Students* in all unadjusted analyses as well as in the adjusted analyses for *Low Work/School + Higher Unemployment* and *Working + High Unemployment*. Participants in the *Low Work/School + Higher Unemployment* and *Working + High Unemployment* profiles also had higher binge drinking than *Students* in adjusted and unadjusted analyses, and participants in the *Half Working/Low School + Highest Unemployment* had higher binge drinking than those in the *Students* profile only when comparing longitudinal use in adjusted analyses.

Homemakers had significantly lower concurrent and longitudinal binge drinking rates when compared to all other profiles in adjusted and unadjusted analyses, as well as consistently lower marijuana use than all other profile, which were significant in all unadjusted comparisons and all but two adjusted comparisons (when compared to *Working* and *Student* profiles) were significant. *Homemakers* also had significantly lower concurrent and longitudinal illicit use than all three profiles characterized by disengagement (with the exception of a nonsignificant comparison with *Half Working/Low School + Highest Unemployment*), lower concurrent and longitudinal illicit use than students only in adjusted analyses, and no significant differences in illicit use with the *Working* profile.

When comparing between the three profiles characterized by disengagement, participants in the *Low Work/School + Higher Unemployment* profile had higher concurrent and longitudinal marijuana use than those in the *Working + High Unemployment* profile in both unadjusted and adjusted analyses, and only higher longitudinal marijuana use than *Half Working/Low School + Highest Unemployment* in unadjusted analyses; the remaining comparisons between those profiles were nonsignificant. The *Working + High Unemployment* and *Half Working/Low School + Highest Unemployment* profiles had no significant differences in marijuana use. Regarding binge drinking, participants in the *Low Work/School + Higher Unemployment* profile differed from those in the *Working + High Unemployment* profile only regarding the former's higher longitudinal use in unadjusted analyses. Participants in the *Low Work/School + Higher Unemployment* had higher rates of concurrent and longitudinal binge drinking than *Half Working/Low School + Highest Unemployment* in unadjusted analyses but only in concurrent binge drinking for adjusted analyses, as the adjusted longitudinal comparison was nonsignificant. Participants in the *Working + High Unemployment* had higher concurrent rates of binge drinking than those in the *Half Working/Low School + Highest Unemployment* profile in unadjusted and adjusted analyses but had no significant differences in longitudinal binge drinking. Finally, regarding illicit use, participants in both the *Low Work/School + Higher Unemployment* and the *Working + High Unemployment* profiles had higher rates of concurrent and longitudinal illicit use than *Half Working/Low School + Highest Unemployment* only in unadjusted analyses, the former two profiles had no significant differences in illicit use,

and all adjusted comparisons of illicit use between profiles characterized by disengagement were nonsignificant.

Discussion

The overarching purpose of the present study was to understand the configurations of young adults' employment and educational experiences and how they relate to risk and protective factors as well as to problematic substance use. This is one of the first studies to capitalize on the heterogeneity of employment and educational experiences (Yates & Payne, 2006) through the use of a person-centered modeling approach rather than dichotomize youth into categories of connected or disconnected (or a similar binary). Profiles with differential patterns of engagement and disengagement emerged earlier and later in the transition to adulthood. Additionally, future expectations and life satisfaction emerged as significant predictors of membership into profiles characterized by disengagement versus those characterized by engagement but did not necessarily predict differential likelihood of membership between the profiles characterized by disengagement. Finally, not only were youth in profiles characterized by disengagement were generally found to exhibit higher rates of substance use than youth who in working and student profiles, differences in substance use were also found between profiles characterized by disengagement at both modal ages 19/20 and 25/26.

Profiles of Engagement and Disengagement

The person-centered analyses implemented in the present study complement and challenge the use of binary conceptualizations of disengagement utilized in prior research. Notably, some researchers have criticized the OY or NEET ("not employed, in education, or training") designation in part because it does not recognize the

heterogeneity of youths' experiences (Yates & Payne, 2006). Others have called for a more restrictive definition reflecting differential risk among disengaged youth (Serracant, 2013). Such a definition might be helpful in work to identify youth most at risk for social exclusion as a separate outcome, but the present study suggests that even youth in profiles exhibiting indicators of disengagement at varying rates still exhibit increased rates of substance use. Thus, taking the approach of a more restrictive definition of disengagement might be less beneficial for prevention research, which is oriented toward understanding the etiology and sequela of disengagement from a broader health disparities perspective (Catalano et al., 2012). Instead, person-centered analyses represent a third approach, as it does not rely on researchers' categorizations but instead capitalizes on heterogeneity, enabling modeling of patterns of engagement and disengagement (including a broader set of indicators), as well as models the uncertainty associated with categorizing participants into latent profiles (Collins & Lanza, 2010). Repeating these latent profile analyses twice across the transition to adulthood also allowed for the emergence of differential patterns and rates of engagement and disengagement for younger and older youth.

In fact, the present study did not find profiles of youth that could be classified as strictly disengaged, but rather found that patterns of youth disengagement cluster in several similar subgroups that might represent varying levels of risk for substance use. In particular, profiles characterized by engagement differentially emerged earlier and later in the transition to adulthood (e.g., two separate profiles of students earlier in the transition and only one later; the most prevalent profiles were primarily in school earlier in the transition and primarily working later in the transition). At each time point, profiles

with similar patterns primarily characterized by disengagement emerged, which were differentiated from each other based primarily on levels of prior unemployment. Additionally, a profile representing homemakers emerged later in the transition to adulthood but not earlier. Importantly, several indicators of disengagement and the broader context of disengagement were not major drivers of profiles differences. In particular, profiles did not meaningfully separate on extent of educational enrollment or employment (i.e., part-time, full-time), military status, SES, or recreation. In prior studies using binary conceptualizations of disengagement, the extent to which these and other indicators indirectly related to disengagement were included vary widely (Hilley et al., 2019).

From a research standpoint, this study's findings of profiles that reflect more heterogeneity than current practice-based conceptualizations of disengagement (like opportunity youth or NEET, for example), bolsters prior critiques (e.g., Serracant, 2013; Yates & Payne, 2006) of the latter designations, which underscore such heterogeneity as a critical flaw of the designations. However, it should be noted that the present study did not simply reconstruct prior studies' classification schemes using a person-centered approach, but instead extended the indicators of both disengagement (i.e., extent of work and school engagement [e.g., part-, full-time], and circumstances surrounding disengagement (i.e., recreation and SES). Additionally, it considered activities beyond a certain point or period in time (i.e., including both present activities and prior unemployment). In considering the utility of specific conceptualizations of disengagement for future research, however, any debate on the nuances of classification systems should be weighed against the reality of policy and practice, both of which are

involved in efforts to address youth disconnection and, in the United States and abroad, often use the opportunity youth or NEET designation (see, for example, Belfield et al., 2012; Mendelson et al., 2018; Yates & Payne, 2006). Additionally, research on the antecedents and sequelae of youth disengagement (even using current conceptualizations) and its relation with mental health and substance use is burgeoning but needs additional work, especially with respect to the developmental implications of disengagement and opportunities for prevention and intervention (Hilley et al., 2019).

In the profiles that were established in the present study, the differences in patterns of engagement and disengagement, as well as proportions of participants in each highlight the developmental nature of both engagement and disengagement across the transition to adulthood. For example, proportions of participants in student profiles were higher earlier in the transition to adulthood, and proportions in working profiles were higher later in the transition to adulthood. Additionally, a homemaking profile emerged only later in the transition to adulthood; this finding may be related to adolescent mothers' continued educational aspirations following pregnancy (i.e., Barr & Simons, 2012) versus more actively choosing to be homemakers specifically later in the transition to adulthood. Both of these findings are likely reflective of changes in the developmental normativity of engagement in school and work (or pressures to be "on track") across the transition to adulthood (Schoon & Heckhausen, 2019).

Risk and Protective Factors in Engagement and Disengagement

Based on prior research (e.g., Barry, Chaney, & Chaney, 2011; Maggs et al., 2017), adolescent risk behaviors truancy and substance use were expected to predict membership in profiles characterized by disengagement. In the present study, however,

adolescent substance use was related to higher likelihood of membership in profiles characterized by disengagement in several cases when compared to student profiles earlier in the transition to adulthood and when compared to the working profile later in the transition to adulthood, and it did not differentiate between profiles characterized by disengagement at either time point. School truancy was generally found to relate to risk for membership in profiles characterized by disengagement when compared to those in student profiles but was less clear in its conferral of risk for disengagement when compared to working profiles. Additionally, comparing between profiles characterized by disengagement, earlier in the transition to adulthood substance use did not distinguish between these profiles while truancy did, and neither distinguished between these profiles later in the transition to adulthood. It may be that low levels of adolescent substance use and truancy, especially measured with relatively low thresholds as in the present study, are related to normative adolescent risk-taking, as shown in previous research (Castellanos-Ryan et al., 2013; Maynard et al., 2012), and, thus, not individually predictive of differential risk for disengagement (or in the case of Messersmith and Schulenberg [2008] seemingly “protective” in predicting educational attainment). However, youth with exposure to persistent or multiple risks might be the ones who are more at risk for eventual disconnection. For example, Schoeneberger (2012) found based on yearly truancy rates that youth exhibiting increasing or chronic truancy were more most at risk for eventually dropping out. Additionally, truancy and substance use have been shown interrelated themselves in a meta-analysis (Hallfors et al., 2002) as well as to other externalizing behaviors in a more recent U.S. national sample (Vaughn et al., 2013).

Further, youths' higher future expectations seemed to be protective with respect to membership in a profile characterized by disengagement versus student profiles and against membership in profiles with highest unemployment earlier in the transition to adulthood, but this relationship was less clear when compared to working profiles at both time points. That youth with higher future expectations were more likely to be engaged than students but not necessarily differentially likely to be working highlights the complex relations between future expectations and engagement. For example, previous work has shown that some youth who do not expect to graduate college do, indeed, graduate, and this pathway was predicted by higher educational aspirations and SES (Messersmith & Schulenberg, 2008). This set of findings might also represent differences in the content of youths' future expectations whereby some youth with "higher" future expectations might have actually had higher expectations specific to work, which has been related to actual occupational attainment, although differentially by race and gender (Mello, 2008; Mello et al., 2012).

Life satisfaction exhibited a similar pattern of findings, such that higher life satisfaction tended to predict lower likelihood of membership in profiles characterized by disengagement than in student profile but seemed to be somewhat less protective when compared to working profiles. Life satisfaction also differentiated between only two profiles characterized by disengagement later in the transition to adulthood. Similar findings have been reported showing that both life satisfaction and depressive symptoms are related to higher likelihood of graduation versus dropping out of school (Liem, Lustig, & Dillon, 2010). Thus, life satisfaction may also be representative of youths' mental health, which has been more specifically reported as related to youths'

disengagement (e.g., Baggio et al., 2014; Cornaglia et al., 2015; Hannan et al., 1997; Schaufeli, 1997).

Problematic Substance Use among Disengaged Profiles

Results from the present study are consistent with previous research showing disengaged youth are generally at risk for increased substance use when compared to their engaged peers (Hilley et al., 2019), with the notable but previously documented exception (i.e., Kerr et al., 2019), to some degree, of binge drinking. Fewer significant differences in binge drinking between profiles characterized by disengagement and student profiles are unsurprising given the well known increase in binge drinking among U.S. college students as compared to their non-college peers (Hingson, Zha, & Smyth, 2017; O'Malley & Johnston, 2002).

Comparisons of the profiles primarily characterized by disengagement at modal age 19/20 with youth in the working profile suggest that youth in primarily disengaged profile might not be substantially different from youth who are working at this age (Gutiérrez-García et al., 2017), as in several cases substance use rates were not significantly different across these profile types. Prior studies have shown that youth work intensity, and to some degree status, are often related to higher substance use (Longest & Shanahan, 2007), especially among White and Asian American higher SES youth (Bachman, Staff, O'Malley, & Freedman-Doan, 2013). Because these studies have primarily been conducted among high school students and the present study was conducted among post-high school youth, their results do not correspond directly but still support the notion that work status among is intertwined with youths' transition toward independence and has complex relations with developmental outcomes like substance

use. Especially in the context of the last several decades, in which rates of postsecondary educational attainment in the U.S. have increased over time (NCES, 2019), exclusively working at this age might be somewhat developmentally non-normative or constitute an “off-track” developmental task, in which case negative outcomes, like substance use engagement, would be expected by extensions of life-course theory (Heckhausen, 2006). However, the mechanisms by which younger working youth come to experience negative developmental outcomes are poorly understood, but prior research with early adolescents points to coping and support in the parent-child relationship, as working in family-owned businesses versus other businesses seemed to be related to better perceived parental support overall and less substance use for males (Hansen & Jarvis, 2000).

Later in the transition to adulthood, results more consistently showed that membership in any profile characterized by disengagement seemed to be associated with problematic substance use when compared to the *Students*, *Working*, or *Homemakers* profiles, which is in line with extant research (Gutiérrez-García et al., 2017). However, a further contribution of the present study is the ability to compare substance use across groups of youth characterized by disengagement, as prior studies have primarily conceptualized a single disengaged status or split disengaged youth into groups based on a characteristic like homemaking, disability, or otherwise being out of the labor force (e.g., Kovess-Masfety, et al., 2016). As noted previously, however, criticisms of such conceptualizations have noted the heterogeneity of youth grouped into such categories. Specifically, Serracant (2013) found evidence of differential risk for social exclusion between disengaged groups, utilizing an extension of the widely used NEET distinction. Findings from the present suggest similar differential risk for substance use between

profiles primarily characterized as disengaged both earlier and later in the transition to adulthood. One noteworthy set of findings for both age groups was that youth in profiles with the highest prior unemployment, which might be seen as the “most disengaged” or most at risk for higher substance use, did not necessarily have highest rates, and in some cases actually exhibited lower substance use than other profiles of disengagement with lower prior unemployment. This is potentially in contrast to previous research from New Zealand showing that exposure to higher unemployment is linked to substance use over the transition to adulthood even after adjusting for confounding factors (Fergusson, Horwood, & Woodward, 2001). However, by using a person-centered approach, the present study does not categorize youth solely on their prior unemployment but rather on the constellation of their engagement and disengagement indicators.

Further, the link between substance use and mental health has been established more broadly (Conway, Compton, Stinson, & Grant, 2006) but has not yet been widely considered in the context of youth disengagement. Although the present study includes life satisfaction, which has been suggested as an indicator of population mental health (e.g., Bray & Gunnell, 2006), as a protective factor in predicting profile membership and as a covariate in establishing profile differences in substance use, future work is needed to understand the unique circumstances of youth who have experienced or are experiencing disconnection as well as mental health problems and substance use. This work may be particularly important in establishing evidence-based best practices for reconnecting formerly disconnected youth or connecting them with needed behavioral health services, as these youth may experience similar barriers to treatment experienced

by homeless youth (e.g., culture surrounding disengagement, resistance to treatment, engagement [or lack thereof] with treatment; Thompson, McManus, & Voss, 2006).

Limitations

Despite its contributions to the literature on risk and protective factors for young adult substance use as well as how profiles of engagement and disengagement related to substance use, this study is not without limitations. First, the data from this study are drawn from MTF, a larger longitudinal, epidemiological study on youth substance use that contributes immensely to understanding rates of and changes in substance use at the U.S. national level. Given the epidemiological nature of MTF, however, there are limits to the breadth and depth of constructs other than substance use-related ones that can be included in questionnaires. Thus, the present study capitalizes on the constructs that are both available and theoretically relevant to questions of substance use among opportunity youth, but not all theoretically relevant constructs are available. For example, MTF has recently implemented items regarding youths' gender identity and sexual orientation that will be beneficial in future work but are not available across most cohorts and, thus, are not included in the present analyses. Similarly, items related to disability are unavailable, so some youth who would otherwise be considered out of the labor force due to their disability would be likely be in one of the profiles characterize by disengagement for the purpose of this study. However, prior research varies in whether and the extent to which disability is considered in classifying opportunity youth (Hilley et al., 2019), so this limitation is reflective of the broader literature based and not solely to the present study.

Additionally, the initial rounds of data collection for each MTF cohort are conducted in schools, potentially excluding from the sample students who have dropped

out of school prior to the first round of data collection and students who are absent during data collection (Miech et al., 2019). Extensive analyses of MTF data combined with other national datasets suggest that the difference in substance use prevalence with and without absentees is negligible but is potentially larger (but still relatively small) for dropouts (Miech et al., 2019). However, in the context of the present study, the relationship between primary statuses in disengagement and substance use might be underestimated, given that high school dropouts are more likely to face difficulty attaining educational credentials (Hurst, Kelly, & Princiotta, 2004) and in the labor market (Bloom, 2010). Finally, the data analyzed in the present study are based on self-report. Participants are informed that their responses to the MTF questionnaire are confidential, but with any self-report measure there is potential for over- or under-reporting and for the effects of social desirability bias (Spector, 2011). MTF researchers have found considerable evidence for the reliability and validity of sensitive substance use measures over time (Johnston & O'Malley, 1985; Miech et al., 2019).

Finally, despite the conceptual distinctions between latent profiles, none of the profiles established in the present study aligned perfectly with current practice-based conceptualizations of disconnection (e.g., opportunity youth). Thus, comparisons between the findings of prior studies and the present study with respect to predicting profile membership and profile differences in substance use are not directly possible. Additionally, patterns of disengagement may differ conceptually from patterns of unemployment. For example, the present study found primary differences in prior unemployment; latent profiles driven by this difference might obscure less common patterns of disengagement, especially as opportunity youth status, for example, requires a

confluence of several indicators of disengagement (e.g., school, work, training). Still, as noted previously, the findings from the present study both broadly support and extend prior work. Despite these limitations, the present study has important implications for future research and practice.

Implications for Future Research

The present study highlights several important future research directions related to (a) conceptualizing disengagement, (b) becoming disengaged, and (c) the effects of disengagement on young adults' substance use. First, the discussion around the conceptualization of youth disengagement is far from settled. Findings from the present study suggest that (a) person-centered analyses are helpful in considering the broader experiences around youth disengagement and (b) explicitly including these broader experiences, especially prior (and not just concurrent) unemployment, might be helpful in addressing common critiques of binary disengagement statuses (i.e., opportunity youth, NEET; Yates & Payne, 2006). However, the present study did not address all possible engagement types and statuses. As precarity in employment changes for youth (Kalleberg, 2018), it will be important to understand how emerging and “non-traditional” activities – especially those not connected or loosely connected to formal social institutions – interplay with existing activities in terms of configurations of youths' engagement and disengagement statuses, as well as their relations to wellbeing and developmental trajectories. For example, inclusion of youth disability/illness and indicators of informal work and alternative education/training opportunities (like apprenticeships), especially as informal entry to work and education seem to be important paths for reconnection (Russell, 2014 Simmons & Thompson, 2011).

Further, risk and protective factors seem to meaningfully differentiate youths' membership in profiles characterized by disengagement versus engagement, as well as between profiles with varying levels of disengagement. Future research should consider the extent to which future expectations and life satisfaction are targetable for interventions to prevent youth disengagement. Promisingly regarding life satisfaction, the reverse pathway has been shown, with the relationship between school climate and life satisfaction is mediated by school satisfaction (Varela et al., 2018). Future research could also include a wider array of protective and (especially) risk factors, as truancy and adolescent substance use did not consistently differentiate profile membership in the present study, as well as consider how patterns of risk and protective factors relate to profile membership (McDermott, Anderson, & Zaff, 2018).

Finally, current research is limited in understanding how reconnection paths relate to subsequent changes in substance use. Said differently, it is unclear whether specific reconnection pathways (e.g., education, work, training) are differentially related to or protective from future substance use. For example, Gonzalez and colleagues (2016) found that attaining a general educational development (GED) credential did not seem protective against substance use when compared to youth who dropped out of high school. Based on findings from the present study, this might be particularly important to understand for younger youth, as the present study suggests younger youth in groups primarily characterized by disengagement might be similar to working youth in terms of their rates of substance use.

Implications for Practice

Many youth-serving organizations might already approach youth disconnection in a less rigid way than researchers (who often define opportunity youth, for example, as being simultaneously disconnected from work and school), but it is feasible that organizations facing resource strain might focus their services on youth considered most “at risk.” Youth in this study were not clearly distinguished into solely disconnected versus connected subgroups, highlighting that more comprehensive screening for service eligibility might be warranted for effective targeting of services. For example, young adults who are reconnecting might find themselves with limited or unstable employment along with extended periods of unemployment; these individuals, who might not be considered disengaged based on a binary conceptualization of disengagement at any given time, might find themselves in need of both technical and logistical support for attaining employment but also for behavioral health services to mitigate risk for substance use and improve their odds of maintaining their engagement. Indeed, community colleges have been identified as an important point of access for youth experiencing disconnection (Loprest, Spaulding, & Nightingale, 2019), but often face budgetary constraints that limit provision of much needed youth-focused services.

Further, in order to effectively promote reconnection, youth-serving organizations should consider youths’ behavioral health as part of the broader context of their disconnection. Drawing a comparison to practices in use in by agencies serving homeless individuals, “housing first” policies, which promote agency for youth experiencing housing instability or homelessness by providing stable housing without preconditions, are regarded as part of best practices for youth-serving organizations (HUD, n.d.). Controlled trials of such policies are now emerging and suggest that they are effective in

improving housing stability and have shown some secondary effects on mental health and quality of life (Chung et al., 2018; Kozloff et al., 2016). Although substance use was not directly reduced in studies from this trial conducted with younger and older adults in Canada (Chung et al., 2018; Kozloff et al., 2016), by removing barriers to substance use treatment, increasing access to harm reduction strategies, and providing stability, such programs (and variations thereof for non-housing-related services) might have potential to improve substance use and mental health outcomes for youth in the long run. Such efforts to reduce barriers are especially important as prior work has found a subgroup of youth who previously dropped out of high school that experienced a wide range of adversities, including substance use and other risk involvement (McDermott, Anderson, & Zaff, 2018).

Taken together, the findings regarding heterogeneity in youths' profiles of disengagement, along with predictors of disengagement and increased substance use, reinforce that youths' efforts to re-engage do not exist in a vacuum. Thus, services provided by youth-serving organizations might need to extend beyond their traditional scope or involve partnerships, data sharing, and integration (e.g., Mendelson et al., 2018) to effectively address youths' needs and remove unnecessary barriers to re-entry. Relatedly, one promising suggestion for community colleges serving students experiencing homelessness or who were formerly in foster care, but which can be extended to other service settings and broader groups of youth experiencing disengagement, is providing a single point of contact for students to reduce stigma around and increase to access multiple forms of services and resources, including help gaining stable housing, food, and healthcare, as well as access to educational and employment

resources (Hallett, Freas, & Mo, 2018). Hallett, Westland, and Mo (2018) suggest this as part of a broader trauma-informed approach to the holistic support of marginalized youth through both the explicit recognition of prior and ongoing potentially traumatic experiences as well as increased services to address youths' needs related to these experiences.

Conclusion

The present study extends prior research on the association between youths' employment and educational engagement and disengagement and problematic substance use by utilizing person-centered analyses to identify subgroups of youth based on their engagement and disengagement, identifying risk and protective factors in predicting membership in these subgroups, and exploring how these subgroups differ in substance use. Findings from the present study suggest that youth disengagement is variable both early and later in the transition to adulthood, as subgroups emerged which were more heterogeneous than typically conceptualized subgroups representing complete disengagement from both work and school. Future expectations and life satisfaction seem to be promotive of youths' statuses in work or school engagement, and typical risk indicators of adolescent substance use and truancy did not seem indicative of higher likelihood of membership in a subgroup characterized by disengagement, suggesting that the mutable, intrapsychic promotive factors might be targetable for intervention and some engagement in risky behavior might simply be indicative of normative adolescent risk-taking. In general, individuals in profiles characterized by disengagement engaged in higher rates of problematic substance use than individuals in primarily working or student profiles, but this was not always the case, and subgroups characterized by disengagement

also differed from each other in their rates of substance use. These results have important implications for practice, including recommendations to consider the broader context of youths' disengagement and substance use and reduce barriers to service engagement through holistic approaches.

Tables

Table 1

Descriptive Statistics for Demographics, Covariates, and Engagement Indicators

<u>Variable</u>	<u>M (SD) or Weighted n (valid %)</u>
<u>Demographics and Covariates (baseline – 12th grade)</u>	
Female	37,786.75 (52.3%)
Race/Ethnicity	
White	51,303.74 (73.5%)
Black	8,515.72 (12.2%)
Asian	1,954.43 (2.8%)
Hispanic	5,165.27 (7.4%)
Other	2,931.64 (4.2%)
Any Adolescent Substance Use	64,228.53 (87.9%)
Living with non-relatives	2,613.46 (3.6%)
Urbanicity	33,390.22 (49.6%)
School Truancy	1.67 (1.27)
Life Satisfaction	4.96 (1.47)
Future Expectations	3.55 (0.68)
<u>LCA Engagement Indicators (by age)</u>	
SES (parent education at baseline)	3.72 (1.20)
Prior Year Unemployment	
19/20	1.38 (2.19)
25/26	0.75 (1.73)
Recreation	
19/20	3.42 (1.30)
25/26	2.62 (1.38)
Homemaking	
19/20	1,002.45 (2.0%)
25/26	1,865.99 (4.4%)
Military	
19/20	1,384.36 (3.0%)
25/26	976.53 (2.4%)
Educational Enrollment Type	
<i>Vocational/Technical Training</i>	
19/20	4,564.56 (9.0%)
25/26	1,025.69 (2.4%)
<i>2-year College</i>	
19/20	9,432.73 (18.5%)
25/26	1,884.74 (4.5%)
<i>4-year College or Graduate/Professional School</i>	
19/20	21,154.41 (41.0%)
25/26	6,100.40 (14.4%)

<u>Variable</u>	<u>M (SD) or Weighted n (valid %)</u>
Educational Enrollment Status	
<i>Not taking classes</i>	
19/20	16,843.06 (32.6%)
25/26	33,198.26 (78.1%)
<i>Less than < half-time enrollment</i>	
19/20	1,727.54 (3.3%)
25/26	2,653.38 (6.2%)
<i>About half-time enrollment or more</i>	
19/20	2,355.16 (4.6%)
25/26	1,824.74 (4.3%)
<i>Full-time enrollment</i>	
19/20	30,792.88 (59.5%)
25/26	4,805.58 (11.3%)
Employment Status	
<i>Two or more different jobs</i>	
19/20	2,854.98 (5.7%)
25/26	3,282.41 (7.8%)
<i>One full-time job</i>	
19/20	13,617.71 (27.2%)
25/26	28,422.69 (67.7%)
<i>One part-time job</i>	
19/20	17,086.36 (34.1%)
25/26	4,458.06 (10.6%)
<i>Not currently working</i>	
19/20	16,579.30 (33.1%)
25/26	5,843.00 (13.9%)
<u>Substance Use Outcomes (by age)</u>	
Past 30-day marijuana use	
19/20	1.57 (1.38)
25/26	1.41 (1.21)
29/30	1.31 (1.08)
Past 2-week binge drinking	
19/20	1.80 (1.24)
25/26	1.67 (1.11)
29/30	1.54 (1.03)
Lifetime illicit substance use	
19/20	15,511.18 (30.3%)
25/26	15,983.33 (38.1%)
29/30	14,686.62 (39.0%)

Note. Counts are weighted and, therefore, are not necessarily whole numbers.

Table 2

Model Fit Statistics for Latent Profile Analyses

<u>Modal Age 19/20 Analyses</u>						
<u>Profiles</u>	<u>LL</u>	<u>Par.</u>	<u>AIC</u>	<u>BIC</u>	<u>Adj. BIC</u>	<u>Entropy</u>
2	-483315.56	33	966,697.12	967,000.32	966,895.45	0.696
3	-467292.99	49	934,863.98	935,134.19	934,978.47	0.699
4	-455926.32	65	911,982.64	912,579.85	912,373.28	0.685
5	-447055.38	81	894,272.76	895,016.80	894,759.56	0.694
6	-442877.23	97	885,948.45	886,839.68	886,531.41	0.707
7	-432626.69	113	865,479.26	866,517.49	866,158.37	0.723
<u>Modal Age 25/26 Analyses</u>						
<u>Profiles</u>	<u>LL</u>	<u>Par.</u>	<u>AIC</u>	<u>BIC</u>	<u>Adj. BIC</u>	<u>Entropy</u>
2	-355,793.52	33	711,653.05	711,956.10	711,851.23	0.760
3	-337,859.48	49	675,816.95	676,266.94	676,111.22	0.784
4	-325,446.17	65	651,022.33	651,619.25	651,412.68	0.808
5	-316,019.05	81	632,200.11	632,943.96	632,686.54	0.713
6	-310,938.50	97	622,071.00	622,961.79	622,653.52	0.713
7	-304,447.10	113	609,120.19	610,157.92	609,798.80	0.711

Note. LL = Loglikelihood. Par. = Number of parameters estimated. AIC = Akaike

Information Criterion. BIC = Bayesian Information Criterion. Bold font indicates the selected model.

Table 3

*Baseline Demographic, Risk and Protective Factors as Predictors of Modal Age 19/20**Profile Membership*

Referent Profile	VT/2Y Students Est. (S.E.)	Working Est. (S.E.)	Half Students + Slightly Higher Unemployment Est. (S.E.)
<i>Working</i>			
Life Satisfaction	-0.028 (0.018)		
School Truancy	0.149 (0.02)***		
Future Expectations	-1.158 (0.039)***		
Adolescent Substance Use	0.319 (0.094)**		
Cohort (ref = 1996 – 2005 Seniors)			
1976 – 1985 Seniors	-0.013 (0.07)		
1986 – 1995 Seniors	-0.123 (0.07)		
Living with Non-relatives	0.286 (0.136)*		
Urbanicity	-0.406 (0.054)***		
Race/Ethnicity			
Black	1.144 (0.095)***		
Hispanic	0.645 (0.094)***		
Asian	-1.045 (0.34)**		
Other	0.496 (0.137)***		
<i>Half Students + Slightly Higher Unemployment</i>			
Life Satisfaction	-0.057 (0.016)***	-0.03 (0.017)	
School Truancy	0.068 (0.019)***	-0.081 (0.018)***	
Future Expectations	-0.426 (0.041)***	0.733 (0.036)***	
Adolescent Substance Use	0.116 (0.082)	-0.202 (0.094)*	
Cohort (ref = 1996 – 2005 Seniors)			
1976 – 1985 Seniors	0.239 (0.067)***	0.251 (0.068)***	
1986 – 1995 Seniors	0.112 (0.065)	0.235 (0.069)**	
Living with Non-relatives	-0.006 (0.137)	-0.292 (0.129)*	
Urbanicity	0.061 (0.049)	0.467 (0.052)***	
Race/Ethnicity			
Black	0.523 (0.092)***	-0.62 (0.081)***	
Hispanic	-0.234 (0.1)*	-0.879 (0.098)***	
Asian	-0.056 (0.159)	0.989 (0.337)**	
Other	0.055 (0.135)	-0.441 (0.126)***	
<i>4Y+ Students</i>			
Life Satisfaction	0.045 (0.016)**	0.072 (0.017)***	0.102 (0.015)***
School Truancy	-0.044 (0.02)*	-0.193 (0.019)***	-0.112 (0.018)***
Future Expectations	0.701 (0.049)***	1.859 (0.045)***	1.127 (0.046)***
Adolescent Substance Use	0.005 (0.072)	-0.314 (0.085)***	-0.111 (0.075)
Cohort (ref = 1996 – 2005 Seniors)			
1976 – 1985 Seniors	-0.812 (0.061)***	-0.799 (0.062)***	-1.051 (0.061)***
1986 – 1995 Seniors	-0.46 (0.056)***	-0.337 (0.061)***	-0.572 (0.058)***
Living with Non-relatives	-0.199 (0.136)	-0.485 (0.131)***	-0.193 (0.133)
Urbanicity	0.434 (0.046)***	0.84 (0.049)***	0.373 (0.046)***
Race/Ethnicity			
Black	0.001 (0.09)	-1.143 (0.081)***	-0.522 (0.08)***
Hispanic	-1.144 (0.107)***	-1.789 (0.106)***	-0.91 (0.113)***
Asian	-0.001 (0.133)	1.044 (0.319)**	0.055 (0.141)
Other	-0.258 (0.132)	-0.754 (0.127)***	-0.313 (0.129)*

Notes. Est. = Estimate (Logit). S.E. = standard error. *** $p < .001$. ** $p < .01$. * $p < .05$.

Table 3, continued

Referent Profile	<i>VT/2Y Students</i> Est. (S.E.)	<i>Working</i> Est. (S.E.)	<i>Half Students + Slightly Higher Unemployment</i> Est. (S.E.)	<i>4Y+ Students</i> Est. (S.E.)	<i>Half Students + Higher Unemployment</i> Est. (S.E.)
<i>Half Students + Higher Unemployment</i>					
Life Satisfaction	-0.062 (0.019)**	-0.034 (0.019)	-0.004 (0.018)	-0.106 (0.018)***	
School Truancy	0.09 (0.022)***	-0.059 (0.02)**	0.022 (0.021)	0.134 (0.021)***	
Future Expectations	-0.592 (0.045)***	0.566 (0.039)***	-0.166 (0.043)***	-1.293 (0.05)***	
Adolescent Substance Use	0.182 (0.1)	-0.137 (0.108)	0.066 (0.102)	0.177 (0.095)	
Cohort (ref = 1996 – 2005 Seniors)					
1976 – 1985 Seniors	0.272 (0.078)***	0.285 (0.078)***	0.033 (0.078)	1.084 (0.073)***	
1986 – 1995 Seniors	0.001 (0.078)	0.124 (0.081)	-0.111 (0.079)	0.461 (0.072)***	
Living with Non-relatives	0.331 (0.147)*	0.045 (0.14)	0.337 (0.144)*	0.53 (0.142)***	
Urbanicity	-0.115 (0.058)*	0.291 (0.06)***	-0.177 (0.057)**	-0.55 (0.055)***	
Race/Ethnicity					
Black	0.924 (0.1)***	-0.22 (0.09)*	0.401 (0.091)***	0.923 (0.09)***	
Hispanic	0.221 (0.111)*	-0.424 (0.108)***	0.455 (0.117)***	1.365 (0.123)***	
Asian	0.207 (0.186)	1.253 (0.35)***	0.264 (0.191)	0.209 (0.17)	
Other	0.449 (0.148)**	-0.047 (0.138)	0.394 (0.143)**	0.707 (0.141)***	
<i>Half Students + Highest Unemployment</i>					
Life Satisfaction	-0.081 (0.019)***	-0.053 (0.019)**	-0.024 (0.018)	-0.126 (0.018)***	-0.019 (0.02)
School Truancy	0.039 (0.022)	-0.111 (0.021)***	-0.03 (0.021)	0.082 (0.021)***	-0.052 (0.023)*
Future Expectations	-0.521 (0.044)***	0.637 (0.039)***	-0.095 (0.042)*	-1.222 (0.05)***	0.071 (0.046)
Adolescent Substance Use	0.09 (0.092)	-0.229 (0.102)*	-0.027 (0.094)	0.085 (0.085)	-0.092 (0.109)
Cohort (ref = 1996 – 2005 Seniors)					
1976 – 1985 Seniors	0.496 (0.076)***	0.509 (0.076)***	0.257 (0.076)**	1.308 (0.071)***	0.224 (0.085)**
1986 – 1995 Seniors	0.048 (0.077)	0.171 (0.08)*	-0.065 (0.078)	0.508 (0.07)***	0.047 (0.088)
Living with Non-relatives	0.471 (0.141)**	0.185 (0.135)	0.478 (0.139)**	0.67 (0.138)***	0.14 (0.148)
Urbanicity	-0.22 (0.056)***	0.186 (0.058)**	-0.281 (0.055)***	-0.654 (0.053)***	-0.104 (0.063)
Race/Ethnicity					
Black	1.501 (0.091)***	0.358 (0.079)***	0.978 (0.08)***	1.5 (0.078)***	0.577 (0.089)***
Hispanic	0.518 (0.104)***	-0.127 (0.101)	0.752 (0.11)***	1.662 (0.116)***	0.297 (0.12)*
Asian	0.653 (0.167)***	1.698 (0.339)***	0.709 (0.172)***	0.654 (0.15)***	0.445 (0.195)*
Other	0.747 (0.138)***	0.251 (0.13)	0.692 (0.133)***	1.005 (0.129)***	0.298 (0.146)*

Notes. Est. = Estimate (Logit). S.E. = standard error. *** $p < .001$. ** $p < .01$. * $p < .05$.

Table 4

*Baseline Demographic, Risk and Protective Factors as Predictors of Modal Age 25/26**Profile Membership*

Referent Profile	<i>Low Work/School + Higher Unemployment</i>		
	<i>Homemakers</i> Est. (S.E.)	<i>Students</i> Est. (S.E.)	Est. (S.E.)
<i>Students</i>			
Life Satisfaction	-0.04 (0.029)		
School Truancy	-0.042 (0.032)		
Future Expectations	0.912 (0.053)***		
Adolescent Substance Use	0.093 (0.127)		
Cohort (ref = 1996 – 2005 Seniors)			
1976 – 1985 Seniors	-0.735 (0.12)***		
1986 – 1995 Seniors	-0.372 (0.125)**		
Living with Non-relatives	-0.602 (0.19)**		
Urbanicity	0.677 (0.083)***		
Race/Ethnicity			
Black	0.422 (0.223)		
Hispanic	0.004 (0.197)		
Asian	1.367 (0.483)**		
Other	-0.035 (0.232)		
<i>Low Work/School + Higher Unemployment</i>			
Life Satisfaction	-0.117 (0.032)***	-0.077 (0.023)**	
School Truancy	0.063 (0.036)	0.105 (0.027)***	
Future Expectations	0.418 (0.059)***	-0.495 (0.057)***	
Adolescent Substance Use	0.269 (0.156)	0.175 (0.12)	
Cohort (ref = 1996 – 2005 Seniors)			
1976 – 1985 Seniors	-0.484 (0.138)***	0.252 (0.095)**	
1986 – 1995 Seniors	-0.53 (0.145)***	-0.158 (0.098)	
Living with Non-relatives	-0.326 (0.224)	0.277 (0.193)	
Urbanicity	0.413 (0.097)***	-0.264 (0.073)***	
Race/Ethnicity			
Black	1.287 (0.231)***	0.865 (0.123)***	
Hispanic	0.097 (0.231)	0.092 (0.167)	
Asian	1.296 (0.511)*	-0.071 (0.211)	
Other	0.602 (0.251)*	0.637 (0.184)**	
<i>Working + High Prior Unemployment</i>			
Life Satisfaction	-0.092 (0.031)**	-0.053 (0.021)*	0.025 (0.026)
School Truancy	0.034 (0.034)	0.077 (0.025)**	-0.028 (0.03)
Future Expectations	0.465 (0.054)***	-0.447 (0.05)***	0.047 (0.058)
Adolescent Substance Use	0.215 (0.141)	0.121 (0.099)	-0.054 (0.136)
Cohort (ref = 1996 – 2005 Seniors)			
1976 – 1985 Seniors	-0.516 (0.129)***	0.22 (0.082)**	-0.032 (0.107)
1986 – 1995 Seniors	-0.341 (0.135)*	0.03 (0.082)	0.188 (0.111)
Living with Non-relatives	-0.68 (0.217)**	-0.078 (0.184)	-0.354 (0.222)
Urbanicity	0.464 (0.09)***	-0.213 (0.062)**	0.051 (0.081)
Race/Ethnicity			
Black	0.903 (0.227)***	0.481 (0.115)***	-0.383 (0.133)**
Hispanic	0.005 (0.214)	0 (0.143)	-0.092 (0.189)
Asian	1.025 (0.502)*	-0.342 (0.189)	-0.271 (0.253)
Other	0.272 (0.242)	0.307 (0.172)	-0.329 (0.199)

Notes. Est. = Estimate (Logit). S.E. = standard error. *** $p < .001$. ** $p < .01$. * $p < .05$.

Table 4, continued

Referent Profile	<i>Homemakers</i> Est. (S.E.)	<i>Students</i> Est. (S.E.)	<i>Low Work/School + Higher Unemployment</i> Est. (S.E.)	<i>Working + High Prior Unemployment</i> Est. (S.E.)	<i>Working</i> Est. (S.E.)
<i>Working</i>					
Life Satisfaction	-0.033 (0.027)	0.007 (0.015)	0.085 (0.021)***	0.06 (0.019)**	
School Truancy	0.063 (0.03)*	0.105 (0.018)***	0 (0.024)	0.028 (0.021)	
Future Expectations	0.391 (0.043)***	-0.521 (0.04)***	-0.027 (0.048)	-0.074 (0.041)	
Adolescent Substance Use	0.508 (0.123)***	0.415 (0.071)***	0.24 (0.115)*	0.294 (0.095)**	
Cohort (ref = 1996 – 2005 Seniors)					
1976 – 1985 Seniors	-1.099 (0.115)***	-0.364 (0.057)***	-0.616 (0.088)***	-0.584 (0.075)***	
1986 – 1995 Seniors	-0.458 (0.12)***	-0.087 (0.055)	0.071 (0.091)	-0.117 (0.075)	
Living with Non-relatives	-0.436 (0.169)*	0.166 (0.123)	-0.11 (0.175)	0.244 (0.165)	
Urbanicity	0.471 (0.079)***	-0.206 (0.044)***	0.058 (0.068)	0.007 (0.056)	
Race/Ethnicity					
Black	1.309 (0.214)***	0.887 (0.083)***	0.022 (0.105)	0.406 (0.096)***	
Hispanic	0.406 (0.186)*	0.402 (0.092)***	0.31 (0.154)*	0.401 (0.127)**	
Asian	0.799 (0.486)	-0.568 (0.132)***	-0.497 (0.213)*	-0.226 (0.191)	
Other	0.387 (0.213)	0.422 (0.127)**	-0.215 (0.16)	0.114 (0.147)	
<i>Half Working/Low School + Highest Unemployment</i>					
Life Satisfaction	-0.167 (0.033)***	-0.128 (0.025)***	-0.05 (0.029)	-0.075 (0.027)**	-0.135 (0.023)***
School Truancy	0.006 (0.038)	0.048 (0.031)	-0.057 (0.034)	-0.028 (0.032)	-0.057 (0.027)*
Future Expectations	0.177 (0.06)**	-0.735 (0.057)***	-0.24 (0.063)***	-0.287 (0.058)***	-0.213 (0.049)***
Adolescent Substance Use	0.185 (0.157)	0.092 (0.121)	-0.084 (0.151)	-0.03 (0.137)	-0.324 (0.116)**
Cohort (ref = 1996 – 2005 Seniors)					
1976 – 1985 Seniors	-0.637 (0.14)***	0.099 (0.098)	-0.153 (0.119)	-0.121 (0.109)	0.463 (0.091)***
1986 – 1995 Seniors	-0.679 (0.148)***	-0.308 (0.102)**	-0.15 (0.126)	-0.338 (0.115)**	-0.221 (0.096)*
Living with Non-relatives	-0.202 (0.226)	0.4 (0.193)*	0.124 (0.23)	0.478 (0.222)*	0.234 (0.174)
Urbanicity	0.329 (0.1)**	-0.347 (0.076)***	-0.084 (0.092)	-0.134 (0.084)	-0.141 (0.071)*
Race/Ethnicity					
Black	1.816 (0.227)***	1.393 (0.116)***	0.529 (0.133)***	0.912 (0.126)***	0.506 (0.097)***
Hispanic	0.674 (0.22)**	0.67 (0.153)***	0.578 (0.196)**	0.67 (0.176)***	0.268 (0.137)
Asian	1.528 (0.512)**	0.162 (0.216)	0.232 (0.273)	0.504 (0.257)	0.729 (0.218)**
Other	0.585 (0.26)*	0.62 (0.198)**	-0.016 (0.221)	0.313 (0.212)	0.199 (0.176)

Notes. Est. = Estimate (Logit). S.E. = standard error. *** $p < .001$. ** $p < .01$. * $p < .05$.

Table 5

Differences in Substance Use by Modal Age 19/20 Profile Membership

Profile	Past 30-day Marijuana Use		Past 2-week Binge Drinking		Lifetime Illicit Use	
	19/20	25/26	19/20	25/26	19/20	25/26
1 – VT/2Y Students	1.462	1.320	1.654	1.599	0.274	0.337
2 – Working	1.601	1.472	1.801	1.643	0.371	0.441
3 – Half Students + Slightly Higher Unemployment	1.746	1.513	1.821	1.675	0.373	0.437
4 – 4Y+ Students	1.409	1.314	1.979	1.731	0.198	0.327
5 – Half Students + Higher Unemployment	1.778	1.547	1.856	1.712	0.382	0.453
6 – Half Students + Highest Unemployment	1.623	1.444	1.665	1.575	0.304	0.381
<u>Profile Comparisons</u>	<u>Unadjusted Profile Differences ($i - j$)</u>					
Profile 1 v. 2	-0.138***	-0.152***	-0.147***	-0.044	-0.097***	-0.105***
Profile 1 v. 3	-0.283***	-0.193***	-0.167***	-0.076**	-0.099***	-0.1***
Profile 1 v. 4	0.053*	0.006	-0.325***	-0.132***	0.076***	0.009
Profile 1 v. 5	-0.316***	-0.227***	-0.202***	-0.113***	-0.108***	-0.117***
Profile 1 v. 6	-0.16***	-0.124***	-0.01	0.024	-0.03**	-0.045***
Profile 2 v. 3	-0.145***	-0.041	-0.02	-0.032	-0.001	0.005
Profile 2 v. 4	0.191***	0.158***	-0.178***	-0.087**	0.174***	0.114***
Profile 2 v. 5	-0.177***	-0.074*	-0.055	-0.069*	-0.011	-0.012
Profile 2 v. 6	-0.022	0.028	0.137***	0.069*	0.067***	0.06***
Profile 3 v. 4	0.336***	0.199***	-0.158***	-0.055*	0.175***	0.109***
Profile 3 v. 5	-0.032	-0.033	-0.035	-0.037	-0.009	-0.017
Profile 3 v. 6	0.123***	0.069*	0.156***	0.1***	0.069***	0.056***

Profile 4 v. 5	-0.368***	-0.232***	0.123***	0.018	-0.184***	-0.126***
Profile 4 v. 6	-0.213***	-0.13***	0.314***	0.156***	-0.106***	-0.054***
Profile 5 v. 6	0.155***	0.103**	0.192***	0.138***	0.078***	0.072***
	<u>Covariate-adjusted Profile Differences ($i - j$)[†]</u>					
Profile 1 v. 2	-0.028	-0.066	-0.124***	0.054	-0.05**	-0.048**
Profile 1 v. 3	-0.255***	-0.158***	-0.369***	-0.023	-0.095***	-0.084***
Profile 1 v. 4	-0.054	-0.01	-0.19***	-0.088**	0.047***	-0.011
Profile 1 v. 5	-0.261***	-0.167***	-0.066*	-0.088*	-0.091***	-0.106***
Profile 1 v. 6	-0.161***	-0.08*	-0.187***	-0.025	-0.036**	-0.043**
Profile 2 v. 3	-0.228***	-0.092*	-0.432***	-0.077*	-0.046**	-0.036*
Profile 2 v. 4	-0.026	0.055	-0.253***	-0.143***	0.097***	0.036*
Profile 2 v. 5	-0.233***	-0.101*	-0.129**	-0.142**	-0.041*	-0.058**
Profile 2 v. 6	-0.134**	-0.014	-0.245***	-0.079*	0.014	0.004
Profile 3 v. 4	0.201***	0.148***	-0.066*	-0.066*	0.142***	0.073***
Profile 3 v. 5	-0.006	-0.009	0.058	-0.065	0.004	-0.022
Profile 3 v. 6	0.094**	0.078*	0.179***	-0.002	0.059***	0.041**
Profile 4 v. 5	-0.207***	-0.157***	0.303***	0	-0.138***	-0.095***
Profile 4 v. 6	-0.107**	-0.07*	0.124***	0.064*	-0.083***	-0.032*
Profile 5 v. 6	0.1*	0.087*	-0.124***	0.063	0.055***	0.063***

Notes. †Due to model estimation issues with covariate-adjusted models for modal age 19/20, estimates for profile differences in substance use control for gender, adolescent substance use, life satisfaction, school truancy, cohort, and living with non-relatives.

Table 6

Differences in Substance Use by Modal Age 25/26 Profile Membership

Profile	<u>Past 30-day Marijuana Use</u>		<u>Past 2-week Binge Drinking</u>		<u>Lifetime Illicit Use</u>	
	<u>25/26</u>	<u>29/30</u>	<u>Estimated Means and Proportions</u>		<u>25/26</u>	<u>29/30</u>
	<u>25/26</u>	<u>29/30</u>	<u>25/26</u>	<u>29/30</u>	<u>25/26</u>	<u>29/30</u>
1 – Homemakers	1.240	1.155	1.156	1.194	0.356	0.358
2 – Students	1.315	1.228	1.593	1.464	0.360	0.367
3 – Low Work/School + Higher Unemployment	1.666	1.556	1.781	1.654	0.461	0.458
4 – Working + High prior unemployment	1.549	1.417	1.746	1.571	0.456	0.460
5 – Working	1.368	1.283	1.789	1.610	0.349	0.375
6 – Half Working/Low School + Highest Unemployment	1.586	1.454	1.626	1.522	0.424	0.417
<u>Profile Comparisons</u>			<u>Unadjusted Profile Differences ($i - j$)</u>			
Profile 1 v. 2	-0.075**	-0.073**	-0.437***	-0.27***	-0.005	-0.009
Profile 1 v. 3	-0.426***	-0.4***	-0.624***	-0.46***	-0.105***	-0.1***
Profile 1 v. 4	-0.308***	-0.261***	-0.59***	-0.377***	-0.1***	-0.102***
Profile 1 v. 5	-0.127***	-0.128***	-0.632***	-0.416***	0.007	-0.017
Profile 1 v. 6	-0.346***	-0.299***	-0.469***	-0.328***	-0.069***	-0.059**
Profile 2 v. 3	-0.351***	-0.327***	-0.187***	-0.19***	-0.101***	-0.091***
Profile 2 v. 4	-0.233***	-0.188***	-0.153***	-0.107***	-0.096***	-0.093***
Profile 2 v. 5	-0.052*	-0.055**	-0.196***	-0.145***	0.012	-0.008
Profile 2 v. 6	-0.271***	-0.226***	-0.032	-0.058	-0.064***	-0.05**
Profile 3 v. 4	0.117**	0.139**	0.035	0.083*	0.005	-0.002
Profile 3 v. 5	0.298***	0.272***	-0.008	0.044	0.112***	0.083***
Profile 3 v. 6	0.08	0.102*	0.155***	0.132**	0.037*	0.041*
Profile 4 v. 5	0.181***	0.133***	-0.043	-0.039	0.107***	0.085***

Profile 4 v. 6	-0.037	-0.037	0.12**	0.049	0.032*	0.043*
Profile 5 v. 6	-0.219***	-0.171***	0.163***	0.087**	-0.076***	-0.042**
<u>Covariate-adjusted Profile Differences ($i - j$)[†]</u>						
Profile 1 v. 2	0.011	-0.001	-0.207***	-0.067*	-0.032*	-0.036*
Profile 1 v. 3	-0.325***	-0.283***	-0.335***	-0.156***	-0.093***	-0.073**
Profile 1 v. 4	-0.18***	-0.154***	-0.328***	-0.13***	-0.087***	-0.083***
Profile 1 v. 5	-0.006	-0.041	-0.355***	-0.182***	0.015	-0.017
Profile 1 v. 6	-0.214***	-0.207***	-0.242***	-0.154***	-0.055**	-0.045
Profile 2 v. 3	-0.336***	-0.282***	-0.128***	-0.088*	-0.061***	-0.036*
Profile 2 v. 4	-0.191***	-0.153***	-0.121***	-0.062*	-0.054***	-0.047**
Profile 2 v. 5	-0.017	-0.04	-0.148***	-0.114***	0.047***	0.019
Profile 2 v. 6	-0.224***	-0.206***	-0.035	-0.087*	-0.022	-0.009
Profile 3 v. 4	0.144**	0.129*	0.007	0.026	0.006	-0.011
Profile 3 v. 5	0.319***	0.242***	-0.02	-0.026	0.108***	0.055**
Profile 3 v. 6	0.111	0.076	0.093*	0.001	0.039	0.028
Profile 4 v. 5	0.174***	0.113**	-0.026	-0.052	0.102***	0.066***
Profile 4 v. 6	-0.033	-0.053	0.086*	-0.024	0.032	0.038
Profile 5 v. 6	-0.208***	-0.166***	0.113**	0.028	-0.069***	-0.028

Notes. †Due to model estimation issues with covariate-adjusted models for modal age 25/26, estimates for profile differences in binge drinking and illicit use control for gender, adolescent substance use, life satisfaction, school truancy, cohort, and living with non-relatives. Similarly, marijuana use models do not control for living with non-relatives; however, sensitivity tests with differences in concurrent marijuana use suggest that the removal of this covariate changed the estimate by less than .06 and did not change the pattern of significance.

Figures

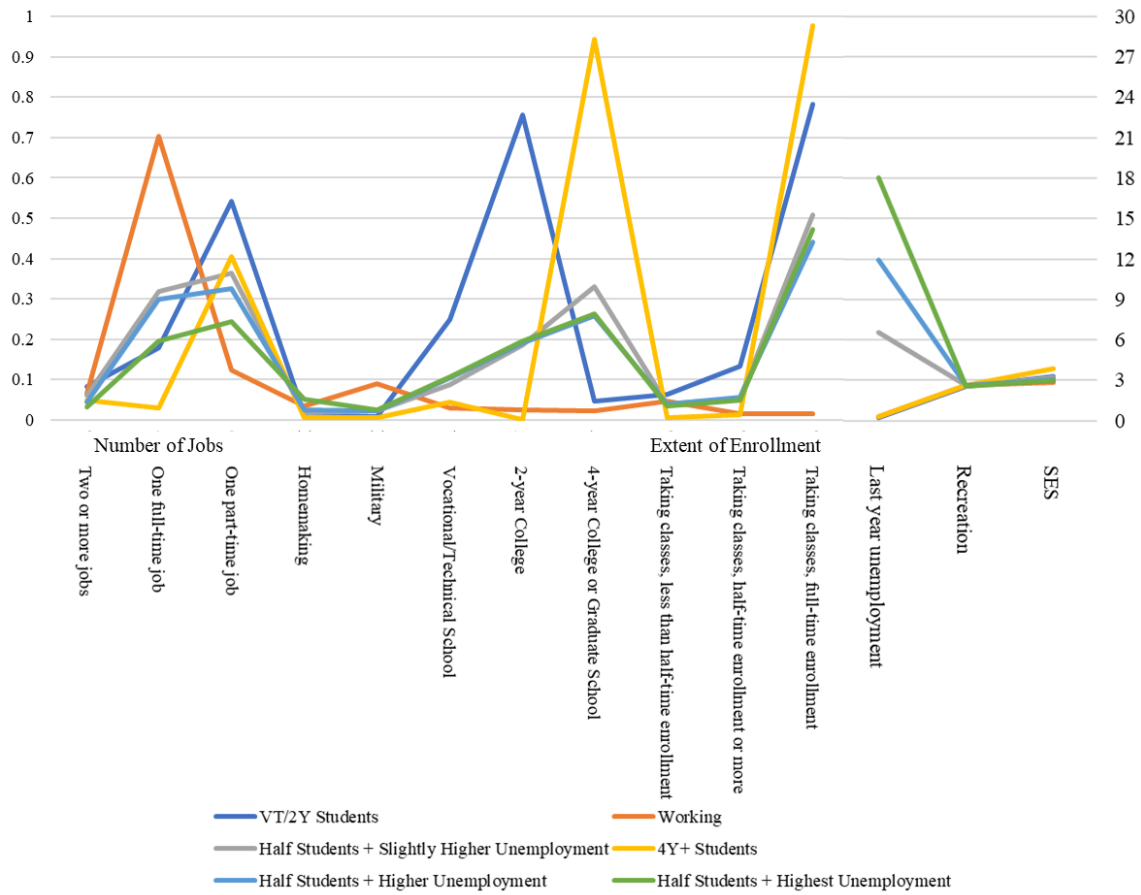
Figure 1

Path Diagram of the Analytic Model Relating Latent Profiles to Substance Use



Figure 2

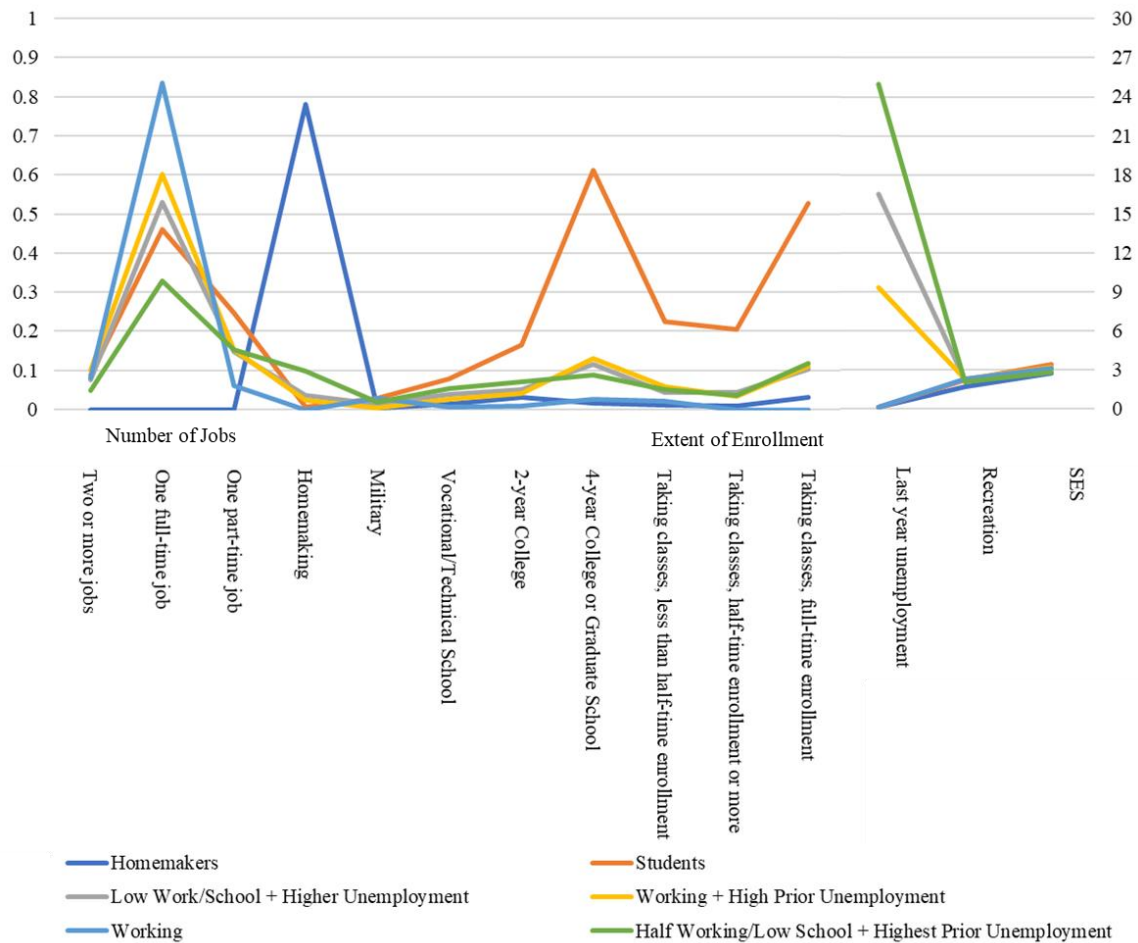
Engagement Indicators by Profile for Modal Age 19/20



Notes. Left axis represents proportions of participants indicating categorical variables. Right axis represents standardized means of continuous variables (Last year unemployment, Recreation, and SES). Vertical labels grouped by a horizontal label represent polytomous categorical variables, and the remainder are binary variables.

Figure 3

Engagement Indicators by Profile for Modal Age 25/26



Notes. Left axis represents proportions of participants indicating categorical variables. Right axis represents standardized means of continuous variables (Last year unemployment, Recreation, and SES). Vertical labels grouped by a horizontal label represent polytomous categorical variables, and the remainder are binary variables.

Dissertation Study 2: Developmental Changes in the Relation Between Opportunity Youth Status and Mental Health During the Transition to Adulthood

Introduction

The present study addresses the association between opportunity youth (OY) status and mental health across the transition to adulthood. In the United States, OY are a relatively large, heterogeneous group of late adolescents and young adults who are not in school or work. Concern has been raised in recent years about the wellbeing of OY, as these youth might be at risk for social isolation and, thus, poor mental health outcomes, in addition to being at risk of losses in lifetime potential earnings (Belfield, Levin, & Rosen, 2012; Hall-Lande, Eisenberg, Christenson, & Neumark-Sztainer, 2007). Several factors have been identified as being related (positively and negatively) to the likelihood of youth becoming OY, chief among them being factors related to individuals' familial and childhood contexts (Mendelson, Mmari, Blum, Catalano, & Brindis, 2018). Additionally, older youth have been found to experience more negative consequences associated with becoming OY than their younger counterparts (Caruana et al., 2019a; Caruana et al., 2019b; Henderson, Hawke, Chaim, & NYSPN, 2017; Holloway, et al., 2018). Therefore, the purpose of the present study is to investigate how OY status and youths' mental health mutually influence each other, as well as the relevant risk and protective factors in this relationship, including developmental changes in the magnitude of these relationships.

Who are Opportunity Youth?

In recent decades, concern about OY has increased among governments, nonprofits, and researchers. In 2018, it was estimated that 12.7% of adolescents and

young adults (ages 15 to 29 years old) in the United States were OY (OECD, 2019). Thus, OY are a relatively large subset of the population of U.S. youth who are at risk for poorer economic outcomes in their lifetime than their non-OY peers. However, this subgroup of youth is not monolithic, instead representing many heterogenous subgroups of U.S. adolescents and young adults.

There are several reasons youth become OY undergirding this heterogeneity, primarily related to access to resources and opportunities, as well as discriminatory policies and practices faced by marginalized youth. For example, Latino, Black, and Native American all face higher burdens of OY status than their White and Asian peers; however, among these pan-ethnic categories, specific subgroups of youth are represented at higher rates (e.g., although Asian youth have the lowest rates of OY status, Hmong youth are OY at rates higher than the U.S. national average; Burd-Sharps & Lewis, 2018). Experiences with the juvenile justice system and school suspensions or expulsions are often barriers to engagement for OY (American Youth Policy Forum, 2015). Unfortunately, youth of color, and Black and Latino boys in particular, systematically experience these forms of exclusionary discipline at higher rates than their White counterparts, a phenomenon known as the school-to-prison pipeline, wherein policies and practices like “zero-tolerance” for infractions of school rules result in youth being removed from the classroom and even faced with arrests and criminal charges (Mallett, 2016). Although national-level data are not available regarding OY rates among lesbian, gay, bisexual, transgender, and other queer (LGBTQ+) youth, data do exist to suggest that LGBTQ+ youth experience discrimination in school and workplace settings, which might contribute to eventual disconnection (Burd-Sharps & Lewis, 2018). Youth

disconnection is also more likely in rural areas and among youth living in poverty (Burd-Sharps & Lewis, 2018), both circumstances related to access to resources and opportunities to engage. Despite these barriers, at any given time, most youth are engaged in some way; still OY represent an important subgroup of youth who can be targeted for coordinated provision of services and resources in an effort to improve their psychosocial academic, and economic outcomes (Mendelson et al., 2018).

Beyond individual and systematic risks, OY have also drawn the attention of policymakers as they represent immediate and long-term costs to taxpayers in terms of decreased tax revenue and increased costs to reconnect to education and employment and needed governmental assistance services (Belfield et al., 2012). In fact, the economic impact of becoming OY can have implications for individuals' socioeconomic status over the lifespan; it is estimated that each OY represents a cost upwards of \$150,000 to \$170,000 to U.S. taxpayers over their lifetimes and that OY stand lose earnings of more than \$300,000 per person in the same period (Belfield, Levin, & Rosen, 2012). In addition to these economic costs, OY experience a higher burden of health and developmental implications than their non-OY peers (Hilley, Lindstrom Johnson, Ferguson-Colvin, Infurna, & Jager, 2019).

Prior research on behavioral health problems among OY has primarily been based in countries other than the United States, with the pattern of findings suggesting that OY are at higher risk for experiencing mental health problems and substance use than their non-OY peers (Hilley et al., 2019). This area of research, however, is still burgeoning and requires additional attention. For example, the mechanisms by which OY come to experience higher rates of mental health and substance use problems have yet to be

explored. Therefore, the ability to make research-informed decisions about prevention and intervention strategies are hindered by limited prior research regarding which OY are at particular risk and which factors might contribute to positive behavioral outcomes despite having been OY. This is especially important as early intervention can alter trajectories of these behavioral health issues, with researchers calling for increased coordination of prevention efforts between the systems that serve OY (i.e., mental health, educational, employment; Scott et al., 2013).

Opportunity Youth and Mental Health

The transition to adulthood is characterized in part by rapid changes in several domains of youths' lives (Settersten & Ray, 2010). Because these transitions prime this period in life for both positive and negative turning points, failure to complete the normative transitions associated with the transition to adulthood during a relatively narrow window of time can put youth at risk for negative developmental outcomes, including poorer mental health (Elder & Shanahan, 2007; Havighurst, 1972). OY are a subgroup of youth who, by definition, either have not completed transitions toward adult roles in work and education or have not consistently engaged in these roles and who are at risk for experiencing mental health problems at rates disproportionate to their non-OY peers. For example, U.S. population estimates suggest that OY are more likely to have received intensive treatment for mental health or substance use than their non-OY peers (Belfield et al., 2012) but the extent to which being OY influences mental health extends well beyond these two relatively extreme indicators of psychosocial wellbeing. Further, OY are not formally connected to two of the social institutions involved in the transition to adulthood (i.e., employers and schools). Thus, OY are not only at higher individual

risk for mental health problems, but they are also disconnected from institutions that can provide resources to navigate life-course transitions and mitigate risk for negative outcomes.

In the limited prior literature, several studies have explored differences in general mental health symptoms between OY and non-OY. Despite finding no baseline differences in mental health between Dutch OY, working youth, or students, Schaufeli (1997) found a significant difference in mental health after one year for OY but not for working youth and students, suggesting that youth with poorer mental health are not simply selecting into circumstances (i.e., OY status) related to worse mental health. These differences are amplified among certain subgroups of OY. For example, Hannan and colleagues (1997) found among an Irish sample that OY who had previously been employed but were now unemployed had the worst mental health in comparison to OY looking for their first job or who had home responsibilities.

Additional studies conducted among adolescents in England have shown that the relationship between OY status and mental health is likely to be bidirectional. Stafford and colleagues (1980) found that OY status was a significant predictor of concurrent poorer mental health. However, in a later longitudinal study, this relationship was found to be more nuanced. Mental health at age 14 was a significant prospective predictor of OY status at age 17/18 for girls but not boys; mental health at age 16 was a significant concurrent predictor of OY status for boys but not for girls (Cornaglia et al., 2015).

The Role of Family Factors in Opportunity Youth Status and Mental Health

Although the transition to adulthood is marked by progress toward independent adult roles, the family context still plays a prominent role youths' social and emotional

development (i.e., the concept of “linked lives” in life course theory; Elder & Shanahan, 2007). In particular, the family of origin can serve as a source of both risk and resilience for young adult outcomes through factors like childhood socioeconomic status (SES) and social support. These factors are important in understanding youths’ mental health and educational/employment outcomes, but life course theory also emphasizes that the roles families play in these outcomes can vary over developmental and historical time.

Although youths’ interdependence upon families versus peers shifts gradually throughout adolescence, families and peers also serve different roles (e.g., closer influence versus socializing, respectively; Laursen & Williams, 1997). This suggests that each also influence different aspects of youths’ social capital accumulation. In particular, families might represent deeper bonding ties and peers might represent weaker bridging ties (Putnam, 2000). Families (especially parents) often provide youth with social (Hardie & Seltzer, 2016) and material support (e.g., monetary, residential) throughout the transition to adulthood, and some evidence suggests parents provide more material support now than at other points in history (Schoeni & Ross, 2005). Although social and emotional support are similarly provided through peer and other relationships, especially as youth get older, it is important to note that relationships are take many forms, and some evidence suggests that peer support can be withdrawn more easily than that of families (Marroquín, 2011; Stice, Ragan, & Randall, 2004). More broadly, despite social support being found to be protective against mental health problems, the mechanisms by which social support influence mental health are poorly understood (Marroquín, 2011).

Additionally, family socioeconomic status (SES) can have long-lasting and cascading effects on youths’ transitions and psychosocial outcomes (Hogan & Astone,

1986). In particular, children from lower SES families have a higher likelihood of poorer psychosocial wellbeing (McLoyd, 1998) and economic problems in adulthood (e.g., through lower educational attainment; Hogan & Astone, 1986). In meta-analyses of studies based primarily in Western countries, Reiss (2013) found negative associations between SES and youths' mental health across a variety of mental health indicators, with low parental education having the largest deleterious influence on mental health. However, the developmental mechanisms by which low SES youth come to exhibit higher prevalence of psychopathology are not well understood (Korous, Causadias, Bradley, & Luthar, 2018). Additionally, youths' socioeconomic condition has been identified as being important in predicting disengagement (Bynner & Parsons, 2002). Specifically, low family SES has been shown to be a risk factor for youth becoming OY (Hair, Moore, Ling, McPhee-Baker, & Brown, 2009) and has been well documented as a risk factor separately for school dropout (Battin-Pearson et al., 2000; Randolph, Fraser, & Orthner, 2006) and young adult unemployment (Doku, Acacio-Claro, Koivusilta, & Rimpelä, 2019; Lander, Rasmussen, & Mortensen, 2012).

Family social support and SES are not only related to OY status and mental health individually but are themselves interrelated (Hardie & Seltzer, 2016) and play a part in the complex dynamics of the family system throughout youths' lives (Broderick, 1993). Lower SES families are likely to have fewer resources (material and immaterial) to provide their children, and these disparities contribute to differences in actual (e.g., financial) and perceived (e.g., emotional, guidance) social support (Schoeni & Ross, 2005). Regardless of familial expectations regarding youths' educational and employment attainment, a longitudinal qualitative study suggests that lower SES families

might lack certain knowledge and intervene in their children's education less than their middle-class counterparts (Lareau & Cox, 2011). This is likely as a function of the differential demands and affordances of their socioeconomic circumstances (e.g., working more hours, having less first-hand experience in educational settings).

Developmental Considerations and Methodological Advantages

The present study represents two primary methodological advantages related to its conceptual and statistical approach that enable a better understanding of the developmental nature of OY status as it relates to mental health. One advantage is the use of three conceptualizations of OY status. Previous research on the mental health of OY has provided a variety of conceptualizations of OY status and suggests that the duration of youths' disengagement from work or school might be a particularly important aspect of the conceptualization of OY status, as longer durations might make coping with their OY status more difficult, negatively influencing mental health. Previous studies have not directly tested this hypothesis regarding duration of disconnection, but one has tested the reverse relationship. Among a large, nationally-representative sample of 16- to 21-year olds in England, Egan, Daly, and Delaney (2015) found that high childhood distress was associated with higher likelihood of becoming OY as well as being OY for more months when compared to children who were not distressed, even after accounting for a variety of individual- and family-level characteristics associated with OY status. The three conceptualizations were: OY for more than one month; OY for more than three months; and primarily OY (more than six months). These conceptualizations were chosen to correspond to prevalent research designs in other studies (i.e., >1 month conceptualization corresponds to cross-sectional designs) and the assessment of brief

versus chronic disengagement (i.e., >3 month OY conceptualization could represent brief or intermittent disconnection, including that which occurs at transition points [e.g., while job searching, waiting to start school or work], and Primarily OY conceptualization suggests youth were disengaged more than they were engaged in a given year).

The second advantage is the inclusion of the time-varying effect of OY status and mental health over time, which enables investigation of developmental differences in the magnitude of associations. Several previous studies have included investigation of the timing of OY status (Caruana et al., 2019a; Caruana et al., 2019b; Henderson et al., 2017; Holloway, et al., 2018). These studies, which were all conducted in the context of help-seeking (mental health or other social services), found that older OY were at higher risk for mental health problems. In three studies of Australian youth seeking clinical mental health services, two studies found that older OY (i.e., 19 to 25 years versus 15 to 18 years, Caruana et al., 2019b; 20 to 25 years versus 15 to 19 years, Holloway et al., 2018) were overrepresented in the clinical sample in comparison to population-level estimates across genders. Another study found that being older predicted being OY within this clinical sample, controlling for several mental health and substance use variables (Caruana et al., 2019a). Similar results emerged from a Canadian study of youth seeking social services across a variety of sectors: older youth were more likely to be OY than their younger peers. Thus, it is important to consider whether the relationship between being OY and mental health strengthens over time. The approaches previously implemented have grouped youth into relatively wide age bands (e.g., comparing OY ages 15 to 18 years old to OY ages 19 to 25 years old), limiting the ability to investigate whether there is an age at which this shift toward poorer mental health for OY occurs.

The present study utilizes a more granular approach to determine whether youth are at particular risk for declines in mental health at one or more specific time points across the transition to adulthood, which would allow for future investigation regarding whether intervention might be more appropriately targeted to youth at a specific age.

Research Questions

The primary aim of the present study is to better understand how OY status influences mental health over the transition to adulthood. Specifically, this study examines the associations between OY status and young adults' mental health, allowing for investigation of developmental changes in this effect across the transition to adulthood. The study also assesses the role of risk (childhood SES) and promotive (social support) factors in this relationship.

Research Question 1. *Do OY status and mental health prospectively predict each other over the transition to adulthood? Does this association change given varying conceptualizations of OY status?* It was hypothesized that OY status and mental health would predict each other such that OY would have poorer mental health two years later and youth with poorer mental health would be more likely to be OY two years later. These associations were expected to emerge more consistently when OY status was conceptualized as with higher thresholds of disconnection.

Research Question 2. *Do the bidirectional associations between OY status and mental health strengthen across the transition to adulthood?* The bidirectional associations between OY status and mental health were expected to be stronger later in the transition to adulthood.

Research Question 3. *Are there direct effects of childhood SES and source of social support on mental health across the transition to adulthood? And are these effects amplified for OY?* Childhood SES was expected to related to poorer mental health over the transition to adulthood and to amplify mental health risk associated with being OY. Family social support was expected to predict better mental health over the transition to adulthood and mitigate mental health risk associated with being OY.

Method

Procedure

The data for this study were drawn from the National Longitudinal Survey of Youth 1997 cohort (NLSY97; Moore, Pedlow, Krishnamurty, & Wolter, 2000). NLSY97 is the most recent of several U.S. nationally representative longitudinal surveys administered by the United States Bureau of Labor Statistics (BLS). The survey was initiated in 1997 among a random sample of youth born in the United States during the years 1980 through 1984 when youth were between 12 and 16 years old; data collection is ongoing and has continued annually through 2013 and biennially starting in 2015. The NLSY 1997 cohort is ideal for addressing the research questions of the present study, as the survey focuses on labor market engagement and lends itself to research involving OY by including detailed reporting of educational and employment histories. NLSY97 includes additional variables (e.g., the mental health variable included in the present study) to varying degrees over the course of data collection and has followed the same individuals from adolescence to adulthood.

Sampling took place in two phases using area-probability sampling methods (Hall, 2008), in which U.S. housing units including eligible (based on age in 1997) youth

were first selected and screened; then, subsamples of eligible youth were selected, oversampling Hispanic and non-Hispanic Black youth (Moore et al., 2000). In initial rounds of data collection, parents of participating youth were asked to sign a written consent form for youth under 17 years old and all youth were asked to complete assent/consent forms. All participants were asked to provide their verbal consent at each round of data collection beginning in round 5, when all participants were over 18 years old. Study procedures were approved by the institutional review boards of the universities contracted by BLS to conduct and manage the surveys. The present study uses the data available from all participants from 2000 to 2010, during which time an average of 87.8% of the initial participants were retained in later rounds. Interviews were primarily completed in person (more than 80% at each round; the remainder were conducted by telephone) using a computer-assisted personal interview instrument administered by an interviewer or an audio computer-assisted self-interview instrument for some self-administered portions deemed sensitive. Data were restructured so that waves corresponded to participants' ages rather than the years in which data were collected.

Participants

Participants were 8,984 respondents to the NLSY97 study. Table 1 provides a summary of participants' unweighted demographic information. Using the race/ethnicity categorization implemented by NLSY97 to select the initial sample and oversample, slightly more than half of the sample (51.9%) were non-Black, non-Hispanic/Latino; 26% of participants were Black or African American; 21.2% were Hispanic or Latino; and 1% were Mixed race, non-Hispanic/Latino. Slightly less than half of participants were female. Participants were required to be between 12 and 16 years old for study inclusion,

and each age in this range was relatively equally represented in the sample (i.e., 18.8 – 20.9% for each age). More than half of participants lived in households where their residential mothers had completed high school or less education (56.3%) and 40% of mothers had completed at least some college.

Measures

Mental Health

Participants' mental health was assessed using the Mental Health Inventory (MHI-5; Berwick et al., 1991). This measure was implemented in 2000 and assessed biennially through 2010. To make maximal use of the available data, the raw data were collapsed to create five biennial assessment rounds across the transition to adulthood, corresponding to the years in which youth were 18- or 19-, 20- or 21-, 22- or 23-, and 24- or 25- years old. Five items were included at each round to address the extent of participants' past-month feelings of nervousness, calm and peace, down or blue, happiness, and depression. These were measured using a 4-point scale ranging from 1 (*All of the time*) to 4 (*None of the time*). The items regarding nervousness, feeling down or blue, and being depressed were reverse coded prior to creating average scores so that higher scores indicate higher ratings of mental health problems (i.e., poorer mental health). The MHI-5 measure has been shown to correspond with the widely used General Health Questionnaire (GHQ-30; Berwick et al., 1991) and has been successfully used to determine clinical screening thresholds in a community sample (Kelly et al., 2008). Several studies have established the psychometric properties (including internal consistency, test-retest reliability, and criterion validity) of this brief measure for use with

youth (Marques, Pais-Ribeiro, & Lopez, 2011; Rivera-Riquelme, Piqueras, & Cuijpers, 2019).

Opportunity Youth Status

OY status was conceptualized in three ways to understand how these decisions influence substantive interpretations of the association between OY status (i.e., neither working nor in school) in a given year and mental health from the previous time point. Variables were created to reflect biennial assessments of OY status between ages 16-/17-years old to 24-/25-years old based on these three conceptualizations and using indicators of work and school engagement. Specifically, high school enrollment was assessed on a monthly basis with response options including enrolled, on vacation, not enrolled, expelled, and other. Monthly binary high school enrollment variables were created in which participants who were enrolled or in school but on vacation were coded 0 (*enrolled in high school*), participants who were expelled or not enrolled were coded 1 (*not enrolled in high school*), and the few participants who were marked as other were coded as missing. College enrollment was assessed on a monthly basis, and response options included not enrolled and enrolled in 2-year, 4-year, and graduate programs; monthly binary college enrollment variables were created in which participants who indicated being enrolled in any three of these program types were coded 0 (*enrolled in college*) and participants who reported no enrollment were coded 1 (*not enrolled in college*). Employment was assessed on a weekly basis, including response options for active military service; being employed; and several unemployed variables, including not being employed and not looking for a job; being unemployed; and being out of the labor force. Monthly binary employment variables were created to indicate whether individuals were

primarily employed or unemployed during that month using the following coding: participants who indicated being employed or in the military were coded 0 (*employed*), participants who reported any type of unemployment were coded 1 (*unemployed*). The variables utilized in analyses were created using the three variables described above. The **any OY status** variable was coded 0 (*always being in high school, college, and/or employed during the year*) and 1 (*not being in high school, college, and/or employed for at least one month during the year*). The **> 3 month OY status** variable was coded 0 (*always being in high school, college, and/or employed during the year or being OY for 3 or less months during the year*) and 1 (*not being in high school, college, and/or employed for more than 3 months during the year*). The **primarily OY status** variable was coded 0 (*always being in high school, college, and/or employed during the year or being OY for 6 or less months during the year*) and 1 (*not being in high school, college, and/or employed for more than 6 months during the year*).

Primary Source of Social Support

At each of the waves in which mental health was assessed participants were also asked, “If you had an emotional problem or personal relationship problem, who would you first turn to for help?” Response options included parents, siblings, other relatives, a boyfriend or girlfriend (or spouse/partner in later rounds), friends, educators, religious professionals, or mental health professionals. Similar to previous research on social support as a predictor of high school dropout, this variable was coded to reflect family of origin versus peer and other sources (i.e., friends; romantic partners; adults like teachers, clergy, or mental health professionals) as respondents’ primary source of social support (Suh, Suh, & Houston, 2007).

Demographic Characteristics and Covariates

Gender was coded 0 (*female*) and 1 (*male*). Race/ethnicity was coded as 0 (*non-Black, non-Hispanic*) and 1 (*non-Hispanic Black; Hispanic or Latino; or Mixed*).

Childhood SES was ascertained using youths' residential mothers' educational attainment at study onset, coded as 0 (*less than high school completion*) or 1 (*high school completion or more*), as individuals who complete their high school education not only earn higher salaries on average than those who do not complete high school (thus, higher material resources; Bureau of Labor Statistics, 2019), the high school diploma is an important indicator of social mobility, providing access to qualitatively different jobs and future educational opportunities (Karas Montez & Friedman, 2015). Mothers' high school completion, in particular, has been related to not only better maternal health but also to better child outcomes, including physical health, access to health insurance and maternal engagement with the child's health (Prickett & Augustine, 2016). Adolescent substance use was assessed using the substance use index modified from the National Survey of Family and Households (Child Trends, 1999), and included binary items regarding any cigarette smoking, drinking alcohol, and use of marijuana at or before age 17, as adolescent substance use has been found to be related to increased risk for lower educational attainment and higher unemployment and mental health problems (Hall et al., 2016). These three items were combined into a single variable coded 0 (*no adolescent substance use*) or 1 (*any adolescent substance use*). Participants' educational attainment was assessed at each round and was included in this study as a binary variable representing high school or GED completion, coded 0 (*Did not complete high school or GED*) or 1 (*Completed high school or GED*).

Analytic Plan

Preliminary analyses were conducted in IBM SPSS version 25, and primary analyses were conducted in the structural equation modeling framework using Mplus version 8.4 (Muthén & Muthén, 2019) using categorical least squares with mean- and variance-adjusted test statistics (referred to in Mplus as WLSMV), as this estimator has been shown to reduce bias and Type I errors when in models using Likert-type data with fewer than five categories (Rhemtulla, Brosseau-Liard, & Savalei, 2012). Missing data were accounted for using multiple imputation. Several fit indices were evaluated in the model-building process (Kline, 2016). Specifically, chi-square tests of model fit (significant difference test indicating better model fit for the less constrained model), Root Mean Square Error of Approximation (RMSEA; generally recommended as $< .05$; Hu & Bentler, 1999), Comparative Fit Index (CFI; $\geq .95$ indicating good model fit; Hu & Bentler, 1999), and Tucker-Lewis Index (TLI; $\geq .95$ indicating good model fit; Hu & Bentler, 1999) were utilized to evaluate model fit. Analyses proceeded in the following manner.

First, a measurement model for mental health was fit, and two sets of conceptually appropriate residual covariances were modeled based on modification indices: (a) repeatedly measured items and (b) within-wave items related to negative affect (i.e., nervous, depressed, feeling down). The measurement model for mental health showed good model fit, $\chi^2(122) = 1,957.662, p < .001$; RMSEA = .042; CFI = .962; TLI = .941.

Next, a series of cross-lagged panel models (CLPMs; Selig & Little, 2012) were fit to model the autoregressive and cross-lagged relations between OY status and mental

health over the course of the study. Then, time-invariant covariates (gender, childhood SES, race/ethnicity) were added as predictors of mental health and OY status. Similarly, source of social support was included as a time-varying covariate (source of social support predicting within-time mental health). Once the covariate-adjusted model had been determined, OY status \times childhood SES and OY status \times social support interaction terms were added to evaluate the role of SES as a risk factor and social support as a promotive factor for mental health among OY. In these models, the mental health and OY status variables are both endogenous and exogenous, and the mental health variable was treated as continuous and the OY status variable as dichotomous, so unstandardized path estimates are reported as standardized estimates are unintuitive in this case. The WLSMV estimator uses probit regression for categorical outcomes; paths predicting OY status are interpreted as the predicted change in the latent continuous variable underlying the binary variable and paths predicting the latent mental health variable are interpreted similar to linear regression, controlling for the influence of covariates in both cases. The final covariate-adjusted models were determined to have acceptable fit. RMSEA for each of the models indicated good fit, ranging from .032 to .036. It should be noted that CFI and TLI are comparative fit indices that rely on comparing the analytic model to a baseline model. When the null model has an RMSEA of less than .158, these relative fit indices mathematically cannot reach the levels typically judged as good model fit (Kenny, 2015). This is an artifact of the null model also having relatively good fit (i.e., the null model in itself decently replicating the sample covariance matrix) and not necessarily an indication of poor fit in the analytic model. Each of the null models used for computation of CFI

and TLI in this study were below .158 (range: 0.108 – 0.115); despite this, the CFIs and TLIs for each model approached levels deemed to indicate acceptable fit.

Results

Descriptive Statistics and Preliminary Analyses

Descriptive statistics for participants demographics can be found in Table 7. Participants were slightly less than half female, 56.3% lower SES, and 40.5% had not participated in any substance use by the time they were 17 years old. Slightly more than half of the sample were non-Black, non-Hispanic/Latino, around a quarter were Black or African American, 21.2% were Hispanic or Latino participants, and 1% were Mixed Race, non-Hispanic/Latino. Correlations among study variables along with their descriptive statistics are presented in Table 8.

Results from CLPMs

Tables 9, 10, and 11 provide the unstandardized path estimates from the CLPMs for the three conceptualizations of OY status duration, respectively.

Stability of Lagged Effects

Each of the lagged effects (i.e., mental health at time $t - 1$ predicting mental health at time t ; OY status at time $t - 1$ predicting OY status at time t) were positive and significant across all models tested. The path coefficients discussed below should be interpreted in the context of these lagged effects. That is, estimates of the effects of covariates on mental health and OY status and their respective cross-lagged paths are over and above the significant effect of prior levels of mental health and OY status, respectively.

Bidirectional Effects of OY Status and Mental Health

When OY status was conceptualized as more than one month of disconnection, OY status at modal ages 18/19 and 20/21 were significantly predictive of poorer mental health two years later, but OY status at modal ages 16/17 and 22/23 did not significantly predict mental health two years later. In >3 months OY and Primarily OY models), similar (to each other) patterns of significance were found, such that OY status at modal ages 16/17 and 18/19 were significantly predictive of poorer mental health two years later, but OY status at modal ages 20/21 and 22/23 were not significantly predictive of mental health.

All but one path estimate ($MH_{22/23} \rightarrow OY_{>3 \text{ month at } 24/25}$) relating mental health to later OY status was significant across all direct effects models. Each significant path estimate indicated that poorer mental health predicted higher likelihood of being OY two years later.

Strength of Paths Across Developmental Time

In each of the direct effects models, Wald tests were conducted to determine whether significant differences existed in the bidirectional effects of mental health and OY status over the course of the transition to adulthood. In the model conceptualizing OY status as >1 month of disengagement, the omnibus Wald test was significant for the $MH \rightarrow OY$ paths, $\chi^2_{\text{Wald}}(2) = 7.296, p = .026$. This difference seemed to be driven primarily by a significant pairwise difference in the earliest and latest paths, $MH_{22/23} \rightarrow OY_{24/25} - MH_{18/19} \rightarrow OY_{20/21} = -0.212, p = .009$ and potentially the marginally significant difference between the first and second paths, $MH_{20/21} \rightarrow OY_{22/23} - MH_{18/19} \rightarrow OY_{20/21} = -0.180, p = .052$, as the pairwise difference between the last two paths was not significant. Additionally, no significant omnibus Wald tests were found for

differences in MH → OY paths in the >3 month OY and Primarily OY status models or the OY → MH paths (in all models).

Family Social Support

In direct effects models, primarily relying on families versus peers for social support predicted higher likelihood of being OY at modal ages 18/19 and 24/25, did not predict likelihood of being OY at modal ages 20/21 or 22/23. Additionally, primarily relying on families versus peers for social support predicted better mental health through modal ages 22/23 but not for modal ages 24/25 (i.e., no SS → 24/25 MH path was significant) across all conceptualizations of duration of OY status.

In models that included social support as a moderator of the OY → mental health paths, effects differed in the Any OY model and the >3 month OY and Primarily OY models. Across all waves, Any OY status was not a significant predictor of mental health for youth who primarily turned to peers for their social support, but this effect significantly differed for OY who relied on families as their primary source of social support, such that youth with families as their primary source of social support were predicted to have poorer mental health. In the two other models, >3 months OY or Primarily OY at modal age 18/19 predicted poorer mental health two years later for youth who primarily relied on peers for social support, and this effect did not significantly differ for youth who had families as their primary source of social support. At later waves (i.e., OY at ages 20/21 → MH at ages 22/23; OY at ages OY at ages 22/23 → MH at ages 24/25), though, >3 months OY and Primarily OY predicted better mental health for youth who primarily relied on peers for social support, and poorer mental health for OY with families as their primary source of social support. .

Childhood SES

In direct effects models, there were no differences in mental health between participants from high and low SES families of origin. Participants from higher SES families of origin, however, were significantly less likely than their lower SES peers to be OY at modal ages 18/19 (in >3 months OY and Primarily OY models) and 20/21 (Any OY or >3 months OY models), but not later during the transition to adulthood.

When examining SES as a moderator of the OY → MH association, OY status at modal age 18/19 predicted poorer mental health two years later for lower SES participants, and that effect was not significantly different for higher SES OY in >3 months OY and Primarily OY models. OY status at modal ages 20/21 and 22/23 did not significantly predict mental health for lower SES youth two years later across any conceptualization of OY status. In two circumstances during these two waves (Any OY at 20/21 → MH at 22/23; >3 months OY at 22/23 → MH at 24/25), SES significantly moderated the relationships such that higher SES OY had poorer mental health.

Covariate Direct Effects

Being male predicted lower mental health problems across all models for modal ages 18/19, 20/21, and 22/23, and across most models for modal age 24/25. In all models where gender was a significant predictor of OY status, being male predicted lower likelihood of being OY. This was true for the majority of paths tested, especially when OY status was conceptualized as being disconnected for more than 3 months. Further, concerning race/ethnicity, no differences in mental health were found between non-Black, non-Hispanic/Latino youth and youth who were Black, Hispanic/Latino, or Mixed race when controlling for other covariates. Across all conceptualizations of OY status,

Black, Hispanic/Latino, or Mixed race youth were, however, more likely to be OY than their non-Black, non-Hispanic/Latino peers at modal ages 18/19, 20/21, and 22/23, but not at modal ages 24/25. Adolescent substance use predicted poorer mental health at modal ages 18/19, 20/21 (except in Primarily OY models), and 24/25, but not at 22/23. Adolescent substance use also predicted higher likelihood of being OY at modal ages 18/19 across all conceptualizations of OY status, with more variable findings for 20/21, 22/23, and 24/25. Across all three conceptualizations of OY status, high school or GED completion predicted better mental health and lower likelihood of OY status at modal ages 18/19 and 20/21 but did not significantly predict differences in mental health or OY status in later waves.

Discussion

The purpose of the present study was to better understand the bidirectional associations between OY status and mental health over the transition to adulthood as well as family-related risk and protective factors in these associations. This research is of importance to governments and public health as OY are a large, diverse subgroup of youth in the U.S. and abroad who represent individual and societal costs with respect to economic losses and diminished human capital (Mendelson et al., 2018). Beyond these widely recognized costs, however, OY also face an increased burden of psychosocial problems, which impacts their quality of life and can further hinder reconnection efforts (Goldman-Mellor et al., 2016). Understanding the risk and protective factors involved in the mental health of disadvantaged youth – including OY – at both the individual and population levels are vitally important to prevention and intervention efforts to mitigate the psychosocial consequences of becoming OY and to promote reconnection (Harvey &

Delfabbro, 2004; Mendelson et al., 2018). Research on the mental health of OY is emerging but limited, generally finding that OY bare a greater burden of poorer overall mental health (Baggio et al., 2015; Stewart et al., 2017), as well as mental health diagnoses (e.g., Kovess-Masfety et al., 2016; Lee et al., 2017; Power et al., 2015). However, significant gaps exist in the literature regarding the mental health of OY in the U.S. as well as consideration of the developmental nature of the relationship between OY status and mental health. Prior research has also most often considered demographic covariates with rare explicit attention to the risk and protective factors surrounding OY status and mental health.

The present study was motivated by a need to address these gaps, using data from a U.S. national sample of youth to assess whether the bidirectional influence of OY status and mental health was consistent across the transition to adulthood. It was expected that (a) OY status and mental health would exhibit bidirectional relations over the transition to adulthood, (b) that these associations would be larger later in later waves, and (c) that childhood SES and family social support would, respectively, amplify and mitigate risk for mental health among OY. Results indicated support for the first hypothesis regarding the bidirectional associations between OY status and mental health, but findings regarding OY status predicting mental health was mostly limited to earlier portions of the transition to adulthood. The second hypothesis that associations would strengthen over time was not supported, and instead the directional association between mental health and Any OY status was found to be stronger earlier in the transition to adulthood. The third set of hypotheses regarding childhood SES and family social support risk and protective factors were partially supported. Overall, SES was related to becoming OY but not

mental health, and SES moderated the relations between OY status and mental health but inconsistently, such that both lower SES OY exhibited higher risk for mental health problems earlier in the transition to adulthood and higher SES OY exhibited higher risk later in the transition to adulthood. Family social support was also related to lower likelihood of OY status and poorer mental health in the overall sample but seemed to confer protection from poorer mental health for OY earlier in the transition to adulthood and additional risk for later.

Bidirectional Associations between OY Status and Mental Health

The present study found differential directional links between OY status and poorer mental health earlier versus later in the transition to adulthood, which extends previous findings from a study of 21- to 26-year old Swiss men (Baggio et al., 2014) that OY status did not prospectively predict mental health, but that mental health did prospectively predict OY status. However, the present study also enables investigation of these bidirectional associations earlier in the transition to adulthood and did find evidence for the prospective association between OY status and mental health for younger youth. Notably, though, the present study was not exclusive to men, and additional work is needed to better disentangle whether the Baggio and colleagues (2014) findings are driven by gender differences (and, thus, would extend only to younger men) or whether the present study elucidates overall developmental differences for both men and women.

This study's differential findings between younger and older youth may be consistent with the literature on cumulative stress, which suggests that a potential outcome of repeated exposure to distress may desensitize youth to its deleterious effects on internalizing outcomes (i.e., stress inoculation; Rudolph & Flynn, 2007), which has

been reported for youth with chronic exposure to violence (Gaylord-Harden, Dickson, & Pierre, 2016). Thus, it may be that youth who are OY later during the transition to adulthood have already experienced disconnection previously, as Tamesberger and Bacher (2014) found around a third of OY in their Austrian sample continued to exhibit indicators of disconnection at several points over the longitudinal study, and another third exhibited these indicators consistently, both circumstances which were more likely among older youth. These youth, then, might not experience the negative mental health consequences in the same way that youth who are experiencing OY status for the first time. That is, older youth might have had more exposure to OY status either personally or indirectly and might have a less negative reaction to their own current OY status given prior experience. However, more work is needed to determine whether this finding replicates or extends even later during the transition to adulthood.

A second possible explanation is that youth who are OY during the later part of the transition to adulthood might have more variable reasons for being disconnected (i.e., due to parenthood, caretaking responsibilities, experiencing illness or disability, etc.); these increased reasons for disconnection were also seen in the Austrian study among youth who were consistently OY over time (Tamesberger & Bacher, 2014). Some of these reasons might lead to less (or even positive) effects on their mental health. For example, Gutiérrez-García and colleagues (2018) found among 19- to 26- year olds in Mexico City that those who were homemakers and were neither working outside the home nor enrolled in school had lower odds of substance use disorders and certain suicidal behaviors. Additionally, in a study of Swedish 17- to 24-year olds, despite finding support for higher overall prevalence of mental health diagnoses among OY than

full-time working youth, Thern et al (2017) found no differences in mental health diagnoses (especially stress and substance use diagnoses) between workers and economically inactive youth. Although their economically inactive category included students, youth with long-term illnesses, and youth in mandatory military service, this group might highlight the possibility of nonsignificant differences due to heterogeneity in reasons for disconnection. Overall, the research on specific subgroups of OY is only recently emerging and will require additional attention, including, for example, how to ensure that OY status does not have long-lasting effects on youths' independence and goal attainment, as disconnection might not influence their mental health in the short term but could indirectly over the long term.

The present study also found broad support for the prospective association between mental health and a higher likelihood of OY status across the transition to adulthood. This finding is consistent with those from several longitudinal studies conducted outside of the U.S, including the Baggio and colleagues (2014) study previously mentioned, which also found this directional association among Swiss men. Similarly, Hale and Viner (2018) found that in a national sample of youth in England that being classified as having poor mental health at 16 years old predicted higher likelihood of being OY at 19 years old for both boys and girls. A similar association has also been found among Australian youth in clinical settings, as Iorfino and colleagues (2018) found that help-seeking youth 12- to 30-years old who had previously attempted suicide at baseline were more likely to be OY at follow up, but these findings did not hold when controlling for baseline OY status. The present study extends these findings by showing

mental health to be predictive of higher likelihood of OY status controlling for prior OY status and, notably, in the context of a non-clinical sample.

These bidirectional associations must also be interpreted in the context of findings of relative stability for mental health and OY status when conceptualized as > 3 months OY or Primarily OY. Schulenberg and Zarrett (2005) note that developmental transitions can play important roles in the continuity of behavioral health across the transition to adulthood, as youth who have previously had trouble navigating transitions might find subsequent transitions similarly difficult, leading to continuity in OY status. Similarly, continuity in both internalizing and externalizing symptoms across the transition to adulthood have been shown in prior work (Burt, Obradović, Long, & Masten, 2008). Given that the mutual influence of OY status and mental health were found in the present study, even with relatively high within-construct stability, important next steps might consider whether OY status predicts variation from mental health trajectories rather than levels of mental health over time and whether change in mental health predicts the likelihood of OY status.

Additionally, given the prevalence of comorbidity of substance use with mental health problems (Conway, Compton, Stinson, & Grant, 2006) and findings from the present study suggesting that adolescent substance use is related to both poorer mental health and higher likelihood of becoming OY across the transition to adulthood, further work is needed to elucidate the extent to which the bidirectional relations between mental health and OY status are also intertwined with substance use across the transition to adulthood. Indeed, the associations between substance use and OY status have been shown in prior work, which has been primarily conducted outside of the United States

(e.g., Baggio et al., 2015; Hadar et al., 1996; Goldman-Mellor et al., 2016; Kovess-Masfety et al., 2016).

Conceptualization of OY Status

A primary contribution of the present study is its use of three different conceptualizations of OY status based on amount of disconnection. Previous studies have implemented a wide variety of conceptualizations of OY status but most have not systematically assessed whether differing conceptualizations lead to different substantive conclusions regarding behavioral outcomes among (Hilley et al., 2019). One notable exception is Egan and colleagues (2015), who assessed the association between distress and amount of disengagement over a longer term, finding that childhood distress was related more months of disengagement across the transition to adulthood. Broadly, the present study found similar patterns of significant findings across the two models conceptualizing OY status as >3 months OY and Primarily OY), but these findings differed from models using the Any OY conceptualization, most notably with respect to the moderating effect of SES. Despite not finding broad differences across models using varying conceptualizations of OY status, the differences that did exist support the importance of investigating differential behavioral findings across these and other conceptualizations of OY status.

The present study explored differences in just one aspect of the conceptualization of OY status, and several more remain, which are important next steps for work on behavioral outcomes among OY. Government and practice-based definitions are important indicators of disengagement, as they are able to most directly inform current policy efforts, but as findings from the present study suggest, OYs' behavioral outcomes

do not exist in a vacuum and must be interpreted in the larger ecological context of youth development (Bronfenbrenner & Morris, 2007). Thus, continued investigation of developmental characteristics like the timing, duration, and intermittency of OY status are critical to informing prevention and intervention efforts, as efforts to reconnect and support positive behavioral outcomes might differ for youth who experience differing patterns of disconnection.

Family Social Support for OY

Primarily relying on the families for social support was found to relate to better mental health earlier in the transition to adulthood and to higher likelihood of being OY at normative transition points (i.e., 18/19, 24/25). The finding that family social support was only predictive of OY status at modal ages 18/19 and 24/25 might represent more normative transition points wherein youth expect to be able to rely more on their families for material support than at other points during the transition to adulthood (Lindell & Campione-Barr, 2017), as U.S. youth are often transitioning from formal educational settings during these years. Previous studies have documented the association between the provision of material support in terms of moving back in with families and being unemployed or “idle” but with inconsistent conclusions about specific transitions. In a British sample, students who became unemployed were the most likely to return home (Stone et al., 2014), and in a U.S. sample, this group did not differ from college students but, rather, youth who were consistently idle had the highest likelihood of moving home (South & Lei, 2015). Together, these studies suggest that OY have been able to utilize their families for material support, but additional work is still needed regarding the extent to which and ways in which OY recruit other forms of support.

Understanding changes in OYs' sources of support seem to be particularly important given the differential findings of the present study about OY mental health by the source of support. Specifically, early in the transition to adulthood, family social support mitigated risk for poorer mental health that seemed to be conferred by peer social support for the Any OY conceptualization but not for other OY conceptualizations. In addition to the well-documented peer contagion effect for externalizing (Dishion & Tipsord, 2011), prior research has found that peers can be a source of contagion of internalizing in children and younger adolescents through co-rumination (Schwartz-Mette & Rose, 2012). Thus, the finding that OY who primarily have peer social support have poorer mental health earlier in the transition to adulthood might be supported by the concept of the contagion effect.

Later in the transition to adulthood, however, OY with families as their primary source of social support seemed to be at greater risk for poorer mental health. A salient aspect of family relationships during the transition to adulthood is the expression of reciprocal support (Lindell & Campione-Barr, 2017), wherein roles become more egalitarian and children begin providing support to their families at higher rates, which may be even particularly salient for older youth. Thus, youth who indicate that they get their primary source of social support from their families might also find that they are themselves a primary source of social support for their families. Therefore, the finding that OY with families as their primary social support have poorer mental health later in the transition to adulthood may be tied to the concept of parent-child role confusion or role reversal; research has suggested that youth experiencing role reversal are at increased risk for psychopathology (Macfie, Brumariu, & Lyons-Ruth, 2015). OY in particular may

find themselves at increased risk for poorer mental health when serving this role as they might have fewer resources to provide (especially instrumental) support, as has been documented among lower SES individuals more broadly (Schoeni & Ross, 2005).

SES, OY Status, and Mental Health

Consistent with previous research, the present study lends support to the notion of SES as a risk factor for becoming OY (Hair et al., 2009). However, this study draws attention to the developmental nature of the effect of family-level SES as it did not predict differences in OY status later during the transition to adulthood. This pattern of findings potentially underscores the issues noted regarding the measurement of family versus peer social support, in which family social support may actually be an indicator of provision of material support for youth whose families can provide such support.

Specifically, it might be more normative for youth to be more financially dependent upon their families earlier in the transition to adulthood but not later (Padilla-Walker, Nelson, & Carroll, 2012), which might highlight differential access to resources between lower and higher SES families for their children to engage at different points in the transition. Thus, although low versus high SES might become a less important indicator of risk for becoming OY later in the transition to adulthood, future research is needed to understand the role of other indicators of SES in the dynamics involved in OYs' broader context (e.g., family, school, and community factors; Bronfenbrenner & Morris, 2007), as well as how these factors interplay with mental health outcomes.

Although there were no overall differences in mental health by SES, several differences were found in the relation of OY status and mental health by SES. Notably, lower SES OY were found to have poorer mental health earlier in the transition to

adulthood, but higher SES OY were found to have worse mental health later in the transition to adulthood. Prior work on parental expectations of affluent youth show how higher SES OY might experience greater pressure from their parents to achieve specific educational and career goals (Luthar & Becker, 2002), so OY status might experience more internalizing symptoms as a result of this pressure. However, other work has shown that lower SES also confers additional risk for behavioral outcomes, specifically substance use, among OY (Lee et al., 2015), suggesting that OY status might relate to differential sets of outcomes for lower and higher SES youth.

Limitations

The present study was limited in several important ways. The present study uses data collected from 1998 through 2008 from the NLSY97 cohort. Thus, conclusions drawn from this earlier cohort might not generalize to the present. However, this data source is currently the only openly accessible U.S. national sample with both measures of mental health as well as the level of granularity regarding education and employment necessary to complete this study. Regarding demographics, this sample largely mirrors recent national data on OY by Measure of America (Burd-Sharps & Lewis, 2018) with respect to gender, and Hispanic or Latino and Black participants are represented in the present study at rates higher than national rates of OY status. The Measure of America sample disaggregates race/ethnicity further than NLSY for Asian/Pacific Islander, Native American, and specific ethnic groups (but not multiracial youth), so comparison of the findings of the present study between these groups is not currently possible. Future research should more directly assess racial/ethnic disparities in OY mental health outcomes given these updated estimates of the demographics of OY.

The study is also limited in its assessment of mental health and social support. For example, the Mental Health Inventory measure implemented in the present study is intended as a screening tool and not a diagnostic tool (Kelly, Dunstan, Lloyd, & Fone, 2008), so it is limited its ability to identify serious mental illness or specific mental health problems. The study was also only able to capture the source of social support and not other important aspects of social support, like quality and social networks, which other studies have found to be important determinants of mental health (Hefner & Eisenberg, 2009; Uchino et al., 2001). Additionally, the present study was also unable to assess role of intergenerational effects on OY status and mental health (e.g., socialization of education and employment norms; intergenerational transmission of mental health). Previous work has shown the importance of understanding familial contexts and processes in understanding youths' education/employment (Whiston & Keller, 2004). Additionally, there is a long history of research on the intergenerational continuity of mental health problems, which have been found in population-level samples (Gonçalves et al., 2016; Landstedt & Almquist, 2019), in addition to findings regarding specific biological mechanisms that produce epigenetic changes in utero (as a response to stress, for example), which interact with children's environments to influence mental health outcomes (Lester, Marsit, Conrads, Bromer, & Padbury, 2012). Thus, future work to explicitly understand the role of parenting, family dynamics, and the intergenerational transmission of mental health problems in the bidirectional associations between OY status and mental health are needed to inform both the literature at large as well as prevention efforts.

Finally, several limitations exist regarding differential statistical power within and between models presented in the present study. The use of three different conceptualizations of OY status results in subsamples of varying sizes based on their OY status and, thus, differences in statistical power across these models. Although testing these three conceptualizations using the same sample advances an understanding of how subjective decisions about OY status conceptualization can influence substantive findings, the interpretation of these differences must be interpreted with caution. Additionally, the extent to which there is variability to predict is an important indicator of statistical power. In the context of the present study, the stability of OY status and mental health over time, therefore, influences the power to detect cross-lagged and covariate effects. Recent critiques of these models suggest the need for investigating within-person changes through the addition of random intercepts components (Berry & Willoughby, 2017), which, unfortunately, are not yet available for models investigating the cross-lagged influence of dichotomous variables. Related to issues of statistical power, the proportions of OY are different at each modal age; this is most notable with the higher proportion of youth who are classified as OY when using the Any OY conceptualization. Although the high school enrollment variable allowed youth to select being in school but on vacation, some youth who were out of school for vacations or other short-term reasons (e.g., summer breaks before college) might have been captured as OY with this conceptualization. This highlights an important limitation of both short-term conceptualizations of OY status and analyses of secondary data where it is less possible to identify reasons for youths' disconnection. Despite these limitations, the present study has implications for both future research and practice.

Implications for Future Research

This and previous studies support the notion that OY share a higher burden of mental health problems on concurrent and longitudinal bases (e.g., Belfield et al., 2012; Cornaglia et al., 2015; Schaufeli, 1997). However, the mechanisms by which OY experience poorer mental health are poorly understood. Critiques of the OY status (or NEET more specifically) designation note that it might not be a good indicator of social exclusion, which is an aspect of the proposed mechanisms by which OY experience poorer outcomes (Serracant, 2014). However, findings from that present study that show these links to poorer mental health suggest even with current conceptualizations of OY status. Thus, although the OY status variable in itself might represent heterogeneity in the lived experiences of youth (Yates & Payne, 2006), this group still appears to be at broad risk for poorer mental health outcomes, and future research to determine the directionality and developmental nature, as well as the extent to which reconnection is related to changes in mental health and quality of life (as is seen among youth experience first episode psychosis in supported employment programs, for example; Baksheev, Allott, Jackson, McGorry, & Killackey, 2012), is warranted. This is especially the case as the present study has shown differences in risk and protective factors as moderators of OY status in predicting mental health.

More specifically, additional work is needed to clarify the roles of family and peer social support for OY. The present study suggests that the relations between source of OYs' primary social support and mental health both differ over time and in which source is protective versus not protective. The present study only scratches the surface of the role of social support for OY mental health, and mainstream social support research

suggests that aspects of social support in addition to the source, including perceived quality and frequency as well as features of social networks, are important determinants of mental health outcomes for young adults (Hefner & Eisenberg, 2009; Uchino et al., 2001; Winefield, Winefield, & Tiggemann, 1992). As discussed in the violence literature, to inform effective prevention and intervention efforts like informal social support programs, a better understanding of the mechanisms of change and expectations about proximal outcomes is needed (Budde & Schene, 2004). The present study suggests the need of better understanding these aspects of social support specific to OY as well.

Additionally, lower SES is regarded as a risk factor for becoming OY (Hair et al., 2009), a finding replicated in the present study, but little is known about the mechanisms by which SES plays a role in this relationship. The present study also supports previous research (Lee et al., 2015) suggesting that SES does, indeed, play a role in OYs' behavioral outcomes but also calls to attention the need to understand not only whether such mechanisms operate similarly for OY, but also the ways by which access to interventions can be increased among OY, who are, by definition, disconnected from social institutions often utilized to deliver such access (Schoon & Heckhausen, 2019). This is especially the case in low SES contexts, where youth have diminished access to such services (Hodgkinson et al., 2017).

More broadly, harkening to resilience research (Masten, 2018), further research is needed to understand the factors that promote mental health despite disconnection, as many OY come to have positive developmental and reconnection outcomes. Studying these individuals specifically might enable exploration of protective factors among these youth who have overcome systemic and individual risk, and some of these factors are

likely to be mutable and could be targeted to mitigate psychosocial risk and enhance reconnection efforts.

Implications for Practice

The present study highlights several implications youth-serving organizations that either explicitly or implicitly serve the needs of OY. Many organizations have existing educational and vocational training programs as means of facilitating reconnection. However, given the bidirectional influence of OY status and mental health, these programs might have the potential to also influence non-educational and non-vocational outcomes, like internalizing and externalizing problems and increased housing stability, as demonstrated in randomized controlled trials of two interventions for youth experiencing homelessness (Ferguson, 2018). Funding agencies could consider also funding the assessment of psychosocial outcomes beyond those directly related to reconnection, as these programs represent an important point-of-entry to mental health services for youth who otherwise might not have access to such services. Similarly, prevention and intervention efforts should consider the developmental nature of the bidirectional associations between OY status and mental health. In particular, reconnection efforts may be hindered by poorer mental health (Goldman-Mellor et al., 2016), which interplays with youths' prior OY status. Finally, SES and social support seem to have relatively complex relations with mental health for OY, but prevention and intervention efforts might be bolstered by considering these and other risk and protective factors, especially as prevention efforts might include programs promoting informal social support and peer mentoring (Budde & Schene, 2004; Mendelson et al., 2018).

Conclusion

Prior work has linked OY status to poorer mental health, often in unidirectional analyses and at various points across the transition to adulthood (Hilley et al., 2019). The present study builds upon this work by exploring bidirectional associations between OY status and mental health across the transition to adulthood in cross-lagged panel models. Additionally, this study utilized three different conceptualizations of OY status and explored family-related factors involved in amplifying and mitigating mental health risk. The results from this study support previous work suggesting OY are at risk for poorer mental health, provide evidence of the developmental nature of the links between OY status and mental health, and show complex relations to family-related risk and protective factors for OYs' mental health outcomes. Given that educational attainment and precarity in employment are major social determinants of health, the present study warrants both prevention efforts that seek to improve mental health outcomes for OY, as well as provides directions for future research needed to inform practice.

Tables

Table 7

Descriptive Statistics for Participants' Demographic Information

<u>Demographic Characteristic</u>	<u><i>N</i> = 8,984 <i>M</i> (<i>SD</i>) or <i>n</i> (%)</u>
Age at study onset	14.35 (1.49)
Female	4,385 (48.8%)
Race/Ethnicity	
Black or African American	2,335 (26%)
Hispanic or Latino	1,901 (21.2%)
Mixed Race, non-Hispanic/Latino	83 (1%)
Non-Black, non-Hispanic/Latino	4,665 (51.9%)
Childhood SES (Mother's education)	
Lower SES: High school completion or less	4,681 (56.3%)
Higher SES: Some college or more	3,324 (40%)
No adolescent smoking or marijuana use	3,636 (40.5%)

Table 8

Descriptive Statistics and Correlations between Study Variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. Any OY 16/17															
2. Any OY 18/19	.157***														
3. Any OY 20/21	.129***	.297***													
4. Any OY 22/23	.109***	.246***	.361***												
5. Any OY 24/25	.107***	.215***	.290***	.343***											
6. >3 m 16/17	.289***	.181***	.170***	.161***	.130***										
7. >3 m 18/19	.127***	.581***	.318***	.268***	.239***	.256***									
8. >3 m 20/21	.138***	.313***	.734***	.365***	.297***	.200***	.354***								
9. >3 m 22/23	.138***	.265***	.373***	.721***	.375***	.182***	.293***	.403***							
10. >3 m 24/25	.115***	.230***	.307***	.359***	.721***	.146***	.271***	.338***	.424***						
11. >6 m OY 16/17	.206***	.160***	.145***	.137***	.124***	.714***	.234***	.170***	.161***	.150***					
12. >6 m OY 18/19	.121***	.424***	.274***	.245***	.221***	.268***	.729***	.334***	.273***	.262***	.265***				
13. >6 m OY 20/21	.125***	.288***	.580***	.335***	.267***	.196***	.354***	.790***	.390***	.316***	.168***	.360***			
14. >6 m OY 22/23	.124***	.249***	.356***	.576***	.354***	.184***	.294***	.394***	.799***	.415***	.178***	.292***	.392***		
15. >6 m OY 24/25	.108***	.213***	.291***	.346***	.578***	.140***	.264***	.334***	.422***	.802***	.163***	.266***	.330***	.429***	
16. MHI 18/19	.038**	.054***	.101***	.084***	.064***	.051***	.067***	.094***	.085***	.064***	.055***	.068***	.081***	.073***	.070***
17. MHI 20/21	.029*	.057***	.124***	.112***	.079***	.050***	.066***	.111**	.114***	.085***	.052***	.074***	.099***	.104***	.093***
18. MHI 22/23	.045***	.082***	.105***	.107***	.102***	.067***	.068***	.090***	.115***	.107***	.069***	.075***	.077***	.114***	.111***
19. MHI 24/25	.029*	.046***	.095***	.092***	.100***	.035***	.057***	.079***	.093***	.101***	.033***	.051***	.077***	.079***	.098***
20. Family SS 18/19	.057***	.102***	.098***	.059***	.065***	.068***	.108***	.104***	.078***	.073***	.062***	.089***	.098***	.078***	.077***
21. Family SS 20/21	.049***	.078***	.085***	.057***	.053***	.062***	.083***	.097***	.079***	.059***	.050***	.080***	.091***	.068***	.059***
22. Family SS 22/23	.042**	.103***	.090***	.054***	.064***	.037***	.094***	.104***	.085***	.082***	.044***	.068***	.099***	.077***	.072***
23. Family SS 24/25	.059***	.108***	.083***	.071**	.084***	.063***	.103***	.107***	.100***	.103***	.053***	.084***	.092***	.099***	.086***
24. HSC 18/19	-.184***	-.156***	-.251***	-.193***	-.190***	-.195***	-.152***	-.254***	-.228***	-.204***	-.175***	-.200***	-.227***	-.218***	-.186***
25. HSC 20/21	-.131***	-.259***	-.319***	-.292***	-.249***	-.299***	-.335***	-.335***	-.317***	-.278***	-.292***	-.347***	-.326***	-.298***	-.265***
26. HSC 22/23	-.133***	-.240***	-.286***	-.255***	-.220***	-.284***	-.323***	-.305***	-.284***	-.248***	-.293***	-.331***	-.303***	-.276***	-.244***
27. HSC 24/25	-.131***	-.232***	-.271***	-.232***	-.212***	-.279***	-.300***	-.292***	-.265***	-.243***	-.282***	-.317***	-.294***	-.259***	-.247***
28. Male	-.055***	0.004	-0.006	-.043***	-.061***	-0.009	-0.001	-0.013	-.040***	-.058***	-0.012	-0.009	-.023*	-.034**	-.056***
29. Black	.056***	.126***	.164**	.155***	.132***	.056***	.121**	.179***	.179***	.159***	.051***	.106***	.165***	.168***	.153***
30. Hispanic	.058***	.084***	.027*	0.014	-.022*	.039**	.070***	.035**	0.01	-0.011	.034**	.051***	.025*	0.008	-0.007
31. Higher SES	-.046***	-.116***	-.174***	-.117***	-.078***	-.101***	-.145***	-.169***	-.140***	-.105***	-.092***	-.139***	-.150***	-.124***	-.105***
32. Adolescent SU	-0.01	.071***	.103***	.079***	.093***	.087***	.097***	.070***	.083***	.079***	.072***	.086***	.060***	.080***	.063***
Valid n or M	3,875	3,043	3,208	3,183	3,021	636	1,431	2,084	2,014	1,898	339	840	1,428	1,405	1,328
Valid % or SD	53.8%	42.6%	36.9%	37.2%	36.1%	8.8%	20.0%	24.0%	23.5%	21.1%	4.7%	11.8%	16.4%	16.4%	15.9%

Notes. OY = opportunity youth status. m = months. MHI = Mental Health Inventory. SS = social support. HSC = high school

completion. SES = socioeconomic status. SU = substance use. *** $p < .001$; ** $p < .01$; * $p < .05$

Table 8, continued.

	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.
17. MHI 20/21	.460***														
18. MHI 22/23	.419***	.477***													
19. MHI 24/25	.361***	.415***	.493***												
20. Family SS 18/19	-.086***	-.052***	-.045**	-.034*											
21. Family SS 20/21	-.051***	-.051***	-.072***	-.046***	.370***										
22. Family SS 22/23	-.053***	-.061***	-.047***	-.058***	.300***	.389***									
23. Family SS 24/25	-0.016	-0.015	-0.013	-0.006	.263***	.327***	.389***								
24. HSC 18/19	-.047***	-.059***	-.076***	-.044***	-.087***	-.078***	-.090***	-.106***							
25. HSC 20/21	-.071***	-.096***	-.086***	-.064***	-.101***	-.078***	-.089***	-.097***	.528***						
26. HSC 22/23	-.060***	-.085***	-.077***	-.064***	-.095***	-.076***	-.077***	-.096***	.464***	.880***					
27. HSC 24/25	-.076***	-.085***	-.085***	-.064***	-.093***	-.061***	-.072***	-.093***	.434***	.821***	.941***				
28. Male	-.167***	-.140***	-.143***	-.132***	.047***	.054***	.070***	.078***	-.084***	-.052***	-.046***	-.031**			
29. Black	-0.007	0.007	0.001	-0.012	.151***	.131***	.133***	.144***	-.084***	-.104***	-.079***	-.072***	-0.013		
30. Hispanic	0.014	-0.012	-0.009	-0.011	.061***	.042***	.029*	0.013	-.063***	-.087***	-.094***	-.088***	0.002	-.307***	
31. Higher SES	-0.004	-0.016	-0.009	-0.015	-.102***	-.078***	-.096***	-.081***	.185***	.233***	.211***	.200***	0.004	-.097***	-.194***
32. Adolescent SU	.100***	.090***	.082***	.088***	-.052***	-.029*	-.028*	0.006	-.079***	-.141***	-.128***	-.117***	.049***	-.094***	-.024*
Valid n or M	1.943	1.943	1.901	1.893	3,290	3,760	3,684	3,589	4,668	6,350	6,463	6,512	4,599	2,335	1,901
Valid % or SD	.499	.503	.500	.491	52.7%	52.0%	51.9%	50.9%	57.8%	82.8%	86.1%	87.4%	51.2%	26.0%	21.2%

Notes. OY = opportunity youth status. m = months. MHI = Mental Health Inventory. SS = social support. HSC = high school

completion. SES = socioeconomic status. SU = substance use. *** $p < .001$; ** $p < .01$; * $p < .05$

Table 9

Final Model Results with 'Any OY Status' Conceptualization

Outcome	Parameter	Model 1: Direct Effects Est. (SE)	Model 2: SS Moderator Est. (SE)	Model 3: SES Moderator Est. (SE)
MH at T1: Modal Age 18/19	Any OY at T0: Modal Age 16/17	0.017 (0.012)	0.012 (0.014)	0.022 (0.013)
	T1 Family SS	-0.062 (0.016)***	-0.056 (0.016)***	-0.075 (0.014)***
	Male	-0.153 (0.011)***	-0.163 (0.013)***	-0.157 (0.012)***
	Black, Hispanic/Latino, or Mixed	0.018 (0.012)	0.008 (0.013)	0.017 (0.012)
	Higher SES	0.005 (0.013)	0.006 (0.015)	-0.024 (0.016)
	Adolescent Substance Use	0.081 (0.011)***	0.092 (0.013)***	0.089 (0.012)***
	HS Completion	-0.041 (0.014)**	-0.025 (0.016)	-0.029 (0.016)
	Any OY at T1: Modal Age 18/19	T0 Any OY	0.349 (0.032)***	0.282 (0.057)***
T1 Family SS		0.123 (0.038)***	0.091 (0.063)	0.154 (0.053)**
Male		-0.040 (0.033)	-0.008 (0.057)	-0.189 (0.044)***
Black, Hispanic/Latino, or Mixed		0.329 (0.032)***	0.320 (0.059)***	0.313 (0.046)***
Higher SES		-0.072 (0.037)	-0.123 (0.062)*	-5.041 (1402.264)
Adolescent Substance Use		0.174 (0.031)***	0.093 (0.059)	0.127 (0.046)**
HS Completion		-0.162 (0.046)***	-0.096 (0.072)	-0.151 (0.060)*
MH at T2: Modal Age 20/21		T1 MH	0.649 (0.024)***	0.679 (0.030)***
	T1 Any OY	0.019 (0.007)**	0.016 (0.011)	0.015 (0.008)
	T2 Family SS	-0.042 (0.015)**	-0.049 (0.017)**	-0.029 (0.014)*
	Male	-0.028 (0.011)**	-0.036 (0.013)**	-0.032 (0.012)**
	Black, Hispanic/Latino, or Mixed	-0.018 (0.012)	-0.021 (0.014)	-0.014 (0.012)
	Higher SES	0.001 (0.011)	0.010 (0.015)	0.065 (21.599)
	Adolescent Substance Use	0.021 (0.010)*	0.022 (0.013)	0.019 (0.012)
	HS Completion	-0.082 (0.028)**	-0.044 (0.037)	-0.094 (0.036)**
	Family SS × T1 Any OY	—	0.039 (0.018)*	—
	Higher SES × T1 Any OY	—	—	0.04 (0.021)
	Any OY at T2: Modal Age 20/21	T1 MH	0.325 (0.059)***	0.182 (0.108)
T1 Any OY		0.460 (0.025)***	0.443 (0.051)***	0.456 (0.033)***
T2 Family SS		0.055 (0.041)	-0.129 (0.080)	0.114 (0.059)

Outcome	Parameter	<u>Model 1:</u>	<u>Model 2:</u>	<u>Model 3:</u>
		<u>Direct Effects</u>	<u>SS Moderator</u>	<u>SES Moderator</u>
		Est. (SE)	Est. (SE)	Est. (SE)
	Male	-0.025 (0.034)	-0.159 (0.070)*	-0.023 (0.051)
	Black, Hispanic/Latino, or Mixed	0.135 (0.035)***	-0.003 (0.072)	0.075 (0.053)
	Higher SES	-0.237 (0.038)***	-0.161 (0.072)*	-3.291 (988.474)
	Adolescent Substance Use	0.177 (0.035)***	0.146 (0.069)	0.126 (0.052)*
	HS Completion	-0.726 (0.091)***	-0.775 (0.188)***	-0.721 (0.125)***
<hr/>				
MH at T3: Modal Age 22/23				
	T2 MH	0.788 (0.028)***	0.803 (0.031)***	0.791 (0.031)***
	T2 Any OY	0.014 (0.006)*	-0.009 (0.010)	0.001 (0.009)
	T3 Family SS	-0.042 (0.015)**	-0.068 (0.018)***	-0.047 (0.016)**
	Male	-0.035 (0.010)***	-0.027 (0.013)*	-0.029 (0.012)*
	Black, Hispanic/Latino, or Mixed	-0.011 (0.011)	-0.018 (0.014)	-0.021 (0.013)
	Higher SES	0.008 (0.012)	0.006 (0.015)	-0.002 (2.837)
	Adolescent Substance Use	0.006 (0.011)	0.019 (0.013)	0.006 (0.013)
	HS Completion	0.020 (0.052)	-0.040 (0.064)	0.019 (0.059)
	Family SS × T2 Any OY	—	0.062 (0.020)**	—
	Higher SES × T2 Any OY	—	—	0.047 (0.024)*
<hr/>				
Any OY at T3: Modal Age 22/23				
	T2 MH	0.145 (0.062)*	-0.156 (0.120)	0.099 (0.085)
	T2 Any OY	0.560 (0.023)***	0.519 (0.052)***	0.520 (0.033)***
	T3 Family SS	0.025 (0.046)	-0.273 (0.076)***	0.038 (0.060)
	Male	-0.135 (0.036)***	-0.203 (0.071)**	-0.15 (0.053)**
	Black, Hispanic/Latino, or Mixed	0.150 (0.036)***	0.127 (0.071)	0.127 (0.054)*
	Higher SES	0.036 (0.039)	-0.001 (0.077)	-2.697 (1176.536)
	Adolescent Substance Use	0.043 (0.037)	0.175 (0.071)*	0.090 (0.054)
	HS Completion	-0.066 (0.177)	-0.318 (0.340)	-0.134 (0.223)
<hr/>				
MH at T4: Modal Age 24/25				
	T3 MH	0.708 (0.024)***	0.718 (0.029)***	0.673 (0.029)***
	T3 Any OY	0.007 (0.005)	-0.010 (0.010)	0.013 (0.009)
	T4 Family SS	0.028 (0.016)	0.003 (0.017)	0.023 (0.015)
	Male	-0.023 (0.010)*	-0.029 (0.013)*	-0.022 (0.011)
	Black, Hispanic/Latino, or Mixed	-0.015 (0.011)	-0.007 (0.013)	-0.012 (0.012)
	Higher SES	-0.011 (0.012)	-0.013 (0.014)	0.048 (14.605)
	Adolescent Substance Use	0.021 (0.010)*	0.021 (0.013)	0.031 (0.012)**
	HS Completion	-0.036 (0.044)	-0.059 (0.052)	-0.043 (0.050)
	Family SS × T3 Any OY	—	0.066 (0.019)***	—
	Higher SES × T3 Any OY	—	—	0.031 (0.023)

Outcome	Parameter	<u>Model 1:</u> <u>Direct Effects</u> Est. (SE)	<u>Model 2:</u> <u>SS Moderator</u> Est. (SE)	<u>Model 3:</u> <u>SES Moderator</u> Est. (SE)
Any OY at T4: Modal Age 24/25				
	T3 MH	0.113 (0.053)*	0.130 (0.078)	0.049 (0.067)
	T3 Any OY	0.482 (0.021)***	0.431 (0.039)***	0.478 (0.031)***
	T4 Family SS	0.137 (0.046)**	-0.119 (0.057)*	0.149 (0.046)***
	Male	-0.154 (0.034)***	-0.196 (0.051)***	-0.162 (0.044)***
	Black, Hispanic/Latino, or Mixed	0.019 (0.036)	-0.023 (0.052)	-0.032 (0.046)
	Higher SES	0.046 (0.039)	0.002 (0.055)	2.179 (608.989)
	Adolescent Substance Use	0.143 (0.035)***	0.083 (0.051)	0.118 (0.045)**
	HS Completion	-0.089 (0.146)	0.140 (0.198)	-0.153 (0.179)
Within-time Residual Covariances				
	T1: MH with Any OY	0.019 (0.008)*	0.007 (0.012)	0.008 (0.009)
	T2: MH with Any OY	0.016 (0.007)*	0.060 (0.013)***	0.026 (0.011)*
	T3: MH with Any OY	0.007 (0.007)	0.043 (0.013)***	0.013 (0.011)
	T4: MH with Any OY	0.014 (0.007)*	0.011 (0.009)	0.012 (0.008)
Wald Tests of Parameter Constraints				
	MH → OY paths	7.296*, <i>df</i> = 2	—	—
	OY → MH paths	2.084 ^{n.s.} , <i>df</i> = 2	—	—
<u>Model Fit Statistics</u>				
	χ^2 test of model fit	4,970.87, <i>df</i> = 460	3,069.57, <i>df</i> = 529	3,811.97, <i>df</i> = 529
	RMSEA	.033	.032	.032
	CFI	.933	.930	.933
	TLI	.915	.913	.916

Note. Est. = Estimate. SE = standard error. SS = social support. SES = socioeconomic status. MH = mental health. OY = opportunity youth status. HS = high school. RMSEA = root mean square error of approximation. CFI = comparative fit index. TLI = Tucker-Lewis index.

Table 10

Final Model Results with '>3 month OY Status' Conceptualization

Outcome	Parameter	Model 1: Direct Effects Est. (SE)	Model 2: SS Moderator Est. (SE)	Model 3: SES Moderator Est. (SE)
MH at T1: Modal Age 18/19				
	>3-mo OY at T0: Modal Age 16/17	0.045 (0.02)*	0.007 (0.025)	0.052 (0.023)*
	T1 Family SS	-0.062 (0.016)***	-0.054 (0.015)***	-0.074 (0.014)***
	Male	-0.153 (0.011)***	-0.163 (0.013)***	-0.157 (0.012)***
	Black, Hispanic/Latino, or Mixed	0.017 (0.011)	0.008 (0.013)	0.017 (0.013)
	Higher SES	0.005 (0.013)	0.004 (0.014)	-0.011 (0.014)
	Adolescent Substance Use	0.08 (0.011)***	0.094 (0.013)***	0.09 (0.012)***
	HS Completion	-0.043 (0.015)**	-0.022 (0.017)	-0.03 (0.016)
>3-mo OY at T1: Modal Age 18/19				
	T0 >3-mo OY	0.741 (0.067)***	0.517 (0.113)***	0.74 (0.077)***
	T1 Family SS	0.135 (0.05)**	0.168 (0.075)*	0.073 (0.059)
	Male	-0.076 (0.036)*	-0.214 (0.075)**	-0.128 (0.05)*
	Black, Hispanic/Latino, or Mixed	0.302 (0.038)***	0.261 (0.077)***	0.275 (0.053)***
	Higher SES	-0.173 (0.046)***	-0.221 (0.084)**	-4.625 (1901.298)
	Adolescent Substance Use	0.246 (0.041)***	0.120 (0.079)	0.239 (0.053)***
	HS Completion	-0.136 (0.054)*	-0.186 (0.093)*	-0.156 (0.074)*
MH at T2: Modal Age 20/21				
	T1 MH	0.648 (0.023)***	0.679 (0.03)***	0.64 (0.026)***
	T1 >3-mo OY	0.018 (0.007)*	0.026 (0.013)*	0.023 (0.009)*
	T2 Family SS	-0.044 (0.014)**	-0.033 (0.015)*	-0.028 (0.014)*
	Male	-0.028 (0.011)**	-0.032 (0.013)*	-0.034 (0.012)**
	Black, Hispanic/Latino, or Mixed	-0.017 (0.012)	-0.021 (0.014)	-0.013 (0.012)
	Higher SES	0.003 (0.011)	0.012 (0.015)	0.107 (42.039)
	Adolescent Substance Use	0.02 (0.01)*	0.021 (0.013)	0.017 (0.012)
	HS Completion	-0.078 (0.03)**	-0.066 (0.038)	-0.088 (0.033)**
	Family SS × T1 >3-mo OY	—	-0.003 (0.021)	—
	Higher SES × T1 >3-mo OY	—	—	0.019 (0.03)
>3-mo OY at T2: Modal Age 20/21				
	T1 MH	0.244 (0.066)***	0.046 (0.137)	0.245 (0.082)**
	T1 >3-mo OY	0.59 (0.031)***	0.603 (0.078)***	0.58 (0.041)***
	T2 Family SS	0.084 (0.05)	0.001 (0.085)	0.106 (0.071)

Outcome	Parameter	<u>Model 1:</u>	<u>Model 2:</u>	<u>Model 3:</u>
		<u>Direct Effects</u>	<u>SS Moderator</u>	<u>SES Moderator</u>
		Est. (SE)	Est. (SE)	Est. (SE)
	Male	-0.064 (0.04)	-0.199 (0.094)*	-0.141 (0.058)*
	Black, Hispanic/Latino, or Mixed	0.217 (0.041)***	0.109 (0.092)	0.225 (0.058)***
	Higher SES	-0.158 (0.046)***	-0.08 (0.096)	-2.887 (1381.44)
	Adolescent Substance Use	0.015 (0.042)	-0.026 (0.092)	0.003 (0.059)
	HS Completion	-0.709 (0.091)***	-0.767 (0.19)***	-0.602 (0.151)***
<hr/>				
MH at T3: Modal Age 22/23				
	T2 MH	0.793 (0.028)***	0.81 (0.032)***	0.797 (0.03)***
	T2 >3-mo OY	0.006 (0.006)	-0.036 (0.011)***	-0.012 (0.009)
	T3 Family SS	-0.042 (0.015)**	-0.061 (0.017)***	-0.046 (0.016)**
	Male	-0.035 (0.01)***	-0.035 (0.014)*	-0.031 (0.012)*
	Black, Hispanic/Latino, or Mixed	-0.009 (0.012)	-0.01 (0.015)	-0.016 (0.013)
	Higher SES	0.006 (0.012)	0.005 (0.016)	-0.077 (23.271)
	Adolescent Substance Use	0.006 (0.011)	0.017 (0.014)	0.006 (0.013)
	HS Completion	0.018 (0.053)	-0.037 (0.061)	0.026 (0.063)
	Family SS × T2 >3-mo OY	—	0.064 (0.021)**	—
	Higher SES × T2 >3-mo OY	—	—	0.051 (0.029)
<hr/>				
>3-mo OY at T3: Modal Age 22/23				
	T2 MH	0.169 (0.069)*	-0.101 (0.139)	0.109 (0.094)
	T2 >3-mo OY	0.624 (0.027)***	0.566 (0.064)***	0.583 (0.037)***
	T3 Family SS	0.085 (0.048)	-0.16 (0.083)	0.139 (0.066)*
	Male	-0.141 (0.041)***	-0.204 (0.091)*	-0.117 (0.059)*
	Black, Hispanic/Latino, or Mixed	0.138 (0.042)***	0.026 (0.09)	0.04 (0.062)
	Higher SES	-0.038 (0.045)	-0.191 (0.093)*	-2.455 (1609.74)
	Adolescent Substance Use	0.126 (0.043)**	0.301 (0.09)***	0.121 (0.062)*
	HS Completion	-0.008 (0.213)	-0.046 (0.308)	-0.096 (0.262)
<hr/>				
MH at T4: Modal Age 24/25				
	T3 MH	0.707 (0.024)***	0.72 (0.029)***	0.676 (0.027)***
	T3 >3-mo OY	0.007 (0.005)	-0.023 (0.01)*	0.011 (0.008)
	T4 Family SS	0.028 (0.016)	0.011 (0.016)	0.022 (0.015)
	Male	-0.021 (0.01)*	-0.034 (0.013)**	-0.021 (0.011)
	Black, Hispanic/Latino, or Mixed	-0.015 (0.011)	-0.004 (0.013)	-0.012 (0.012)
	Higher SES	-0.009 (0.012)	-0.022 (0.015)	0.043 (22.767)
	Adolescent Substance Use	0.021 (0.01)*	0.027 (0.013)*	0.032 (0.012)**
	HS Completion	-0.028 (0.044)	-0.059 (0.049)	-0.061 (0.05)
	Family SS × T3 >3-mo OY	—	0.069 (0.021)***	—
	Higher SES × T3 >3-mo OY	—	—	0.066 (0.028)*

Outcome	Parameter	<u>Model 1:</u> <u>Direct Effects</u> Est. (SE)	<u>Model 2:</u> <u>SS Moderator</u> Est. (SE)	<u>Model 3:</u> <u>SES Moderator</u> Est. (SE)
<u>>3-mo OY at T4: Modal Age 24/25</u>				
	T3 MH	0.077 (0.063)	0.008 (0.096)	-0.05 (0.078)
	T3 >3-mo OY	0.631 (0.027)***	0.562 (0.051)***	0.611 (0.038)***
	T4 Family SS	0.23 (0.062)***	-0.097 (0.067)	0.247 (0.061)***
	Male	-0.166 (0.042)***	-0.15 (0.07)*	-0.194 (0.054)***
	Black, Hispanic/Latino, or Mixed	0.07 (0.043)	0.044 (0.068)	0.049 (0.056)
	Higher SES	0.061 (0.046)	0.128 (0.073)	2.931 (1263.167)
	Adolescent Substance Use	0.078 (0.043)	-0.019 (0.068)	0.053 (0.056)
	HS Completion	-0.336 (0.193)	-0.238 (0.223)	-0.439 (0.206)*
<u>Within-time Residual Covariances</u>				
	T1: MH with >3-mo OY	0.027 (0.008)***	-0.011 (0.014)	0.02 (0.01)*
	T2: MH with >3-mo OY	0.015 (0.008)	0.072 (0.015)***	0.029 (0.011)**
	T3: MH with >3-mo OY	0.014 (0.009)	0.081 (0.015)***	0.015 (0.011)
	T4: MH with >3-mo OY	0.015 (0.008)	0.024 (0.011)*	0.022 (0.01)*
<u>Wald Tests of Parameter Constraints</u>				
	MH → OY paths	3.299 ^{n.s.} , <i>df</i> = 2	—	—
	OY → MH paths	1.662 ^{n.s.} , <i>df</i> = 2	—	—
<u>Model Fit Statistics</u>				
	χ^2 test of model fit	5,039.97, <i>df</i> = 460	4,249.93, <i>df</i> = 529	3,859.88, <i>df</i> = 529
	RMSEA	.034	.036	.032
	CFI	.933	.903	.932
	TLI	.914	.879	.915

Note. Est. = Estimate. SE = standard error. SS = social support. SES = socioeconomic status. MH = mental health. OY =

opportunity youth status. HS = high school. RMSEA = root mean square error of approximation. CFI = comparative fit index.

TLI = Tucker-Lewis index.

Table 11

Final Model Results with 'Primarily OY Status' Conceptualization

Outcome	Parameter	Model 1: Direct Effects Est. (SE)	Model 2: SS Moderator Est. (SE)	Model 3: SES Moderator Est. (SE)
MH at T1: Modal Age 18/19	Primarily OY at T0: Modal Age 16/17	0.075 (0.025)**	0.034 (0.034)	0.091 (0.03)**
	T1 Family SS	-0.062 (0.016)***	-0.055 (0.016)***	-0.074 (0.015)***
	Male	-0.154 (0.011)***	-0.163 (0.013)***	-0.157 (0.013)***
	Black, Hispanic/Latino, or Mixed	0.018 (0.012)	0.008 (0.013)	0.02 (0.013)
	Higher SES	0.006 (0.013)	0.003 (0.014)	-0.007 (0.014)
	Adolescent Substance Use	0.08 (0.011)***	0.093 (0.013)***	0.09 (0.012)***
	HS Completion	-0.039 (0.014)**	-0.024 (0.016)	-0.028 (0.015)
	Primarily OY at T1: Modal Age 18/19	T0 Primarily OY	0.805 (0.088)***	0.492 (0.161)**
T1 Family SS		0.132 (0.059)*	0.136 (0.088)	0.031 (0.065)
Male		-0.124 (0.043)**	-0.217 (0.097)*	-0.125 (0.057)*
Black, Hispanic/Latino, or Mixed		0.241 (0.047)***	0.146 (0.101)	0.229 (0.062)***
Higher SES		-0.216 (0.054)***	-0.24 (0.113)*	-4.499 (2002.679)
Adolescent Substance Use		0.224 (0.05)***	0.105 (0.101)	0.234 (0.062)***
HS Completion		-0.343 (0.059)***	-0.383 (0.111)***	-0.383 (0.085)***
MH at T2: Modal Age 20/21		T1 MH	0.647 (0.024)***	0.669 (0.03)***
	T1 Primarily OY	0.023 (0.008)**	0.029 (0.014)*	0.023 (0.01)*
	T2 Family SS	-0.043 (0.015)**	-0.03 (0.015)*	-0.029 (0.014)*
	Male	-0.026 (0.011)*	-0.033 (0.014)*	-0.031 (0.012)**
	Black, Hispanic/Latino, or Mixed	-0.017 (0.012)	-0.018 (0.014)	-0.016 (0.012)
	Higher SES	0.006 (0.012)	0.013 (0.015)	0.105 (45.28)
	Adolescent Substance Use	0.019 (0.01)	0.022 (0.013)	0.016 (0.013)
	HS Completion	-0.08 (0.03)**	-0.077 (0.039)*	-0.076 (0.032)*
	Family SS × T1 Primarily OY	—	0.015 (0.026)	—
	Higher SES × T1 Primarily OY	—	—	0.052 (0.044)
	Primarily OY at T2: Modal Age 20/21	T1 MH	0.185 (0.073)*	-0.182 (0.155)
T1 Primarily OY		0.638 (0.037)***	0.656 (0.091)***	0.655 (0.05)***
T2 Family SS		0.09 (0.054)	0.098 (0.093)	0.054 (0.078)

Outcome	Parameter	<u>Model 1:</u>	<u>Model 2:</u>	<u>Model 3:</u>
		<u>Direct Effects</u>	<u>SS Moderator</u>	<u>SES Moderator</u>
		Est. (SE)	Est. (SE)	Est. (SE)
	Male	-0.097 (0.047)*	-0.234 (0.118)*	-0.224 (0.066)***
	Black, Hispanic/Latino, or Mixed	0.231 (0.047)***	0.081 (0.114)	0.186 (0.066)**
	Higher SES	-0.107 (0.057)	-0.063 (0.121)	-2.846 (1486.823)
	Adolescent Substance Use	0.002 (0.049)	-0.06 (0.111)	0.031 (0.069)
	HS Completion	-0.729 (0.106)***	-0.685 (0.2)***	-0.65 (0.139)***
<hr/>				
MH at T3: Modal Age 22/23				
	T2 MH	0.796 (0.028)***	0.808 (0.032)***	0.797 (0.03)***
	T2 Primarily OY	0.006 (0.006)	-0.052 (0.011)***	-0.004 (0.009)
	T3 Family SS	-0.043 (0.014)**	-0.054 (0.016)***	-0.047 (0.015)**
	Male	-0.035 (0.01)***	-0.042 (0.014)**	-0.029 (0.013)*
	Black, Hispanic/Latino, or Mixed	-0.008 (0.012)	-0.008 (0.015)	-0.017 (0.014)
	Higher SES	0.005 (0.012)	0 (0.017)	-0.028 (9.97)
	Adolescent Substance Use	0.007 (0.011)	0.017 (0.014)	0.005 (0.014)
	HS Completion	0.018 (0.058)	-0.026 (0.064)	0.029 (0.05)
	Family SS × T2 Primarily OY	—	0.046 (0.023)*	—
	Higher SES × T2 Primarily OY	—	—	0.063 (0.036)
<hr/>				
Primarily OY at T3: Modal Age 22/23				
	T2 MH	0.151 (0.077)*	-0.271 (0.157)	0.187 (0.103)
	T2 Primarily OY	0.637 (0.031)***	0.557 (0.073)***	0.608 (0.042)***
	T3 Family SS	0.078 (0.057)	-0.113 (0.094)	0.116 (0.079)
	Male	-0.112 (0.047)*	-0.251 (0.11)*	-0.045 (0.067)
	Black, Hispanic/Latino, or Mixed	0.166 (0.048)***	0.162 (0.101)	0.065 (0.07)
	Higher SES	-0.01 (0.054)	-0.212 (0.109)	-1.222 (1591.639)
	Adolescent Substance Use	0.163 (0.048)***	0.42 (0.106)***	0.084 (0.069)
	HS Completion	-0.05 (0.202)	-0.079 (0.339)	0.081 (0.242)
<hr/>				
MH at T4: Modal Age 24/25				
	T3 MH	0.711 (0.024)***	0.722 (0.029)***	0.673 (0.028)***
	T3 Primarily OY	0.002 (0.005)	-0.045 (0.011)***	0.009 (0.009)
	T4 Family SS	0.029 (0.015)	0.014 (0.016)	0.022 (0.015)
	Male	-0.024 (0.01)*	-0.042 (0.014)**	-0.021 (0.012)
	Black, Hispanic/Latino, or Mixed	-0.014 (0.011)	0.001 (0.014)	-0.011 (0.012)
	Higher SES	-0.011 (0.012)	-0.03 (0.015)*	0.024 (27.223)
	Adolescent Substance Use	0.022 (0.01)*	0.035 (0.014)*	0.033 (0.012)**
	HS Completion	-0.027 (0.049)	-0.06 (0.05)	-0.051 (0.044)
	Family SS × T3 Primarily OY	—	0.086 (0.023)***	—
	Higher SES × T3 Primarily OY	—	—	0.057 (0.034)

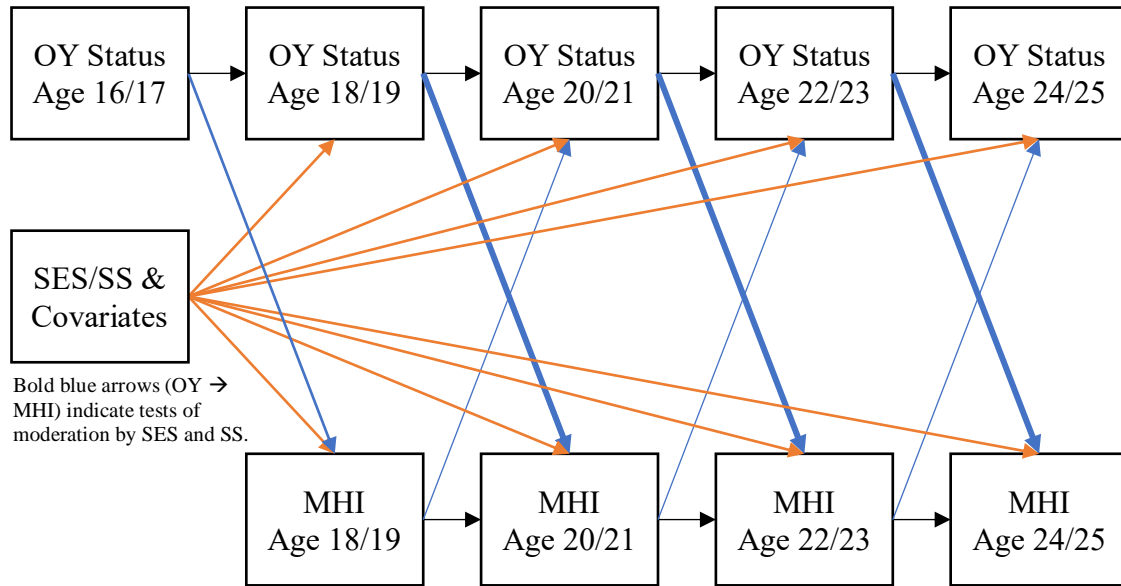
Outcome	Parameter	<u>Model 1:</u> <u>Direct Effects</u> Est. (SE)	<u>Model 2:</u> <u>SS Moderator</u> Est. (SE)	<u>Model 3:</u> <u>SES Moderator</u> Est. (SE)
Primarily OY at T4: Modal Age 24/25				
	T3 MH	0.167 (0.07)*	0.126 (0.106)	-0.002 (0.089)
	T3 Primarily OY	0.672 (0.031)***	0.549 (0.055)***	0.638 (0.044)***
	T4 Family SS	0.206 (0.077)**	-0.059 (0.074)	0.218 (0.071)**
	Male	-0.168 (0.048)***	-0.153 (0.081)	-0.171 (0.062)**
	Black, Hispanic/Latino, or Mixed	0.079 (0.05)	0.014 (0.076)	0.055 (0.065)
	Higher SES	0.017 (0.054)	0.06 (0.081)	2.478 (1473.217)
	Adolescent Substance Use	0.015 (0.049)	-0.097 (0.076)	0.025 (0.063)
	HS Completion	-0.413 (0.183)*	-0.525 (0.271)	-0.678 (0.204)***
Within-time Residual Covariances				
	T1: MH with Primarily OY	0.022 (0.01)*	-0.011 (0.017)	0.01 (0.012)
	T2: MH with Primarily OY	0.015 (0.009)	0.119 (0.016)***	0.017 (0.013)
	T3: MH with Primarily OY	0.018 (0.01)	0.109 (0.016)***	0.016 (0.012)
	T4: MH with Primarily OY	0.011 (0.009)	0.031 (0.012)*	0.02 (0.011)
Wald Tests of Parameter Constraints				
	MH → OY paths	0.093 ^{n.s.} , <i>df</i> = 2	—	—
	OY → MH paths	0.046 ^{n.s.} , <i>df</i> = 2	—	—
<u>Model Fit Statistics</u>				
	χ^2 test of model fit	4,826.01, <i>df</i> = 460	3,045.97, <i>df</i> = 529	3,831.86, <i>df</i> = 529
	RMSEA	.033	.032	.032
	CFI	.935	.931	.932
	TLI	.917	.914	.915

Note. Est. = Estimate. SE = standard error. SS = social support. SES = socioeconomic status. MH = mental health. OY = opportunity youth status. HS = high school. n.s. = not significant. RMSEA = root mean square error of approximation. CFI = comparative fit index. TLI = Tucker-Lewis index.

Figures

Figure 4

Path Diagram of the Cross-Lagged Panel Model Relating OY Status and Mental Health



Notes. OY = opportunity youth; SES = socioeconomic status; SS = social support; MHI = mental health inventory.

Integrative Discussion

The transition to adulthood is a period of rapid changes in many domains of youths' lives, including transitions toward adult social roles in education and work, priming this period of life for turning points in developmental trajectories (Elder & Shanahan, 2007; Settersten & Ray, 2010). Failing to complete developmental tasks like the normative social role transitions of young adulthood can put youth at risk for developmental problems, including poorer mental health and problematic substance use, and risk for poor outcomes may be amplified by disengagement from important social institutions that provide resources and support (i.e., work, schools; Havighurst, 1972) and serve social control roles (Agnew, 1992). Thus, the broad purpose of this dissertation was to better understand the role of youth disengagement from work and school in mental health and substance use outcomes across the transition to adulthood while also explicitly examining some of the assumptions made in prior research about the measurement of disengagement.

Study 1 empirically identified subgroups of youth based on their employment and educational engagement and disengagement at two developmentally relevant time points throughout the transition to adulthood and related these subgroups to risk and protective factors as well as problematic substance use outcomes. Rather than finding subgroups that were exclusively disengaged, this study found evidence of several similar groups characterized by disengagement which were differentiated primarily on their prior unemployment both earlier and later in the transition to adulthood, as well as differences in the types (e.g. working, students, homemakers) and prevalence of profiles characterized by engagement earlier versus later in the transition. Although typical risk

indicators of school truancy and adolescent substance use were not exclusively indicative of risk for membership in a profile characterized by disengagement, they meaningfully differentiate in several circumstances, particularly with respect to predicting lower likelihood of membership in student profiles. Future expectations and life satisfaction, however, were more broadly (but not exclusively) related to lower likelihood of membership in profiles characterized by disengagement. Participants in profiles characterized by disengagement also generally engaged in substance use at higher rates than youth in profiles characterized by engagement. However, earlier in the transition to adulthood, this seemed to be less the case when comparing profiles characterized by disengagement to working profiles; differences in substance use between profiles characterized by disengagement also suggested that these groups are not necessarily at equal risk for higher substance use.

Study 2 implemented three variations of a widely used conceptualization of youth disconnection to understand how the mental health of these youth and, importantly, the family-related risk and protective factors involved in this dynamic relationship over the transition to adulthood. In particular, this study explored the bidirectional relations between opportunity youth (OY; or youth who are neither in school nor working) status with overall mental health as well as socioeconomic status (SES) and family social support as moderators of the effect of OY status on mental health. Findings from this study show that the relations between OY status and mental health previously documented in non-U.S. samples replicate in a sample U.S. youth: OY status prospectively predicts poorer mental health and poorer mental health prospectively predicts higher likelihood of OY status. This is one of the first studies to test these

associations from a developmental cross-lagged approach, finding that OY status seems to be more influential on mental health (in terms of significance) earlier in the transition to adulthood, which is potentially related to increased variability around older youths' experiences as OY, and a stronger association earlier in the transition to adulthood between mental health at modal ages 18/19 and 22/23 and OY two years later, even with significant findings across all waves. This study also challenges the notion that all forms of social support are equal, especially for youth experiencing marginalization, like OY. In particular, OY who relied on their families as their primary social support, in some cases, had poorer mental health, which may be reflective of differences in youths' expectations about the type of support their families provide relative to their peers and the type of social capital each is linked to. This study also suggests that both lower and higher SES OY can be at additional risk for poorer mental health, although lower SES OY might still be at heightened long term risk given fewer resources to reconnect and access mental health services.

Findings from these studies suggest that additional research regarding risk and protective factors for youth disengagement and (particularly) for differential behavioral outcomes for youth experiencing disengagement is necessary. The mechanisms by which youth become disengaged are poorly understood, and future research to elucidate them may also provide beneficial in reducing disparities in behavioral health outcomes experienced by these groups.

Many efforts to reengage youth are underway across the United States. To attain a better understanding of the behavioral health of disengaged youth in their immediate contexts, research-practice partnerships with these agencies could prove mutually

beneficial. Such partnerships could provide access to data (Mendelson et al., 2018), which could, in turn, allow researchers to undertake studies and evaluation efforts directly relevant to the needs of the organizations while also informing the broader literature base on behavioral health among disengaged youth and best practices in providing behavioral health services to these groups. Additionally, organizations serving disengaged youth should take steps to minimize the stigma of both disconnection and behavioral health problems, as youths' perceptions of stigma might present an additional barrier to accessing services (Chandra & Minkovitz, 2006; Gaspani, 2018; MacDonald, 2008; Wang, Link, Corrigan, Davidson, & Flanagan, 2018). One way to potentially reduce stigma and increase program staffers' understanding of the complexity involved in youth disconnection and related mental health problems would be increased coordination between service systems, as has been suggested by numerous researchers for reasons including improvement of clinical, social, and economic outcomes (Scott et al., 2013). To summarize broadly, practitioners should understand that disengaged youth seeking reconnection services might also need behavioral health services, and their organizations could provide a point-of-access to that care. The efficacy of efforts to connect OY with mental health services could be enhanced by reduction of stigma related to disconnection and mental health, as well as service and data coordination with other interconnected systems.

References

- Agnew, R. (1992). Foundation for a general strain theory of crime and delinquency. *Criminology*, *30*(1), 47-88. doi:10.1111/j.1745-9125.1992.tb01093.x
- Akaike, H. (1987). Factor analysis and AIC. *Psychometrika*, *52*(3), 317–332.
- Allen, L., Miles, M., & Steinberg, A. (2014) Achieving collective impact for opportunity youth. *Stanford Social Innovation Review*, *12*(4), 20-22.
- American Youth Policy Forum. (2015). *Opportunity youth*. Retrieved from www.aypf.org/wp-content/uploads/2015/03/MI-Report.pdf
- Asparouhov, T., & Muthén, B. (2014). Auxiliary variables in mixture modeling: Three-step approaches using Mplus. *Structural Equation Modeling: A Multidisciplinary Journal*, *21*, 329–341.
- Bachman, J. G., Staff, J., O'Malley, P. M., & Freedman-Doan, P. (2013). Adolescent work intensity, school performance, and substance use: Links vary by race/ethnicity and socioeconomic status. *Developmental Psychology*, *49*(11), 2125–2134. doi:10.1037/a0031464
- Baggio, S., Iglesias, K., Deline, S., Studer, J., Henchoz, Y., Mohler-Kuo, M., & Gmel, G. (2015). Not in education, employment, or training status among young Swiss men. Longitudinal associations with mental health and substance use. *Journal of Adolescent Health*, *56*(2), 238-243.
- Baggio, S., Iglesias, K., Deline, S., Studer, J., Henchoz, Y., Mohler-Kuo, M., & Gmel, G. (2015). Not in education, employment, or training status among young Swiss men. Longitudinal associations with mental health and substance use. *Journal of Adolescent Health*, *56*(2), 238-243. doi:10.1016/j.jadohealth.2014.09.006
- Baksheev, G. N., Allott, K., Jackson, H. J., McGorry, P. D., & Killackey, E. (2012). Predictors of vocational recovery among young people with first-episode psychosis: findings from a randomized controlled trial. *Psychiatric Rehabilitation Journal*, *35*(6), 421-427. doi:10.1037/h0094574
- Barry, A. E., Chaney, B., & Chaney, J. D. (2011). The impact of truant and alcohol-related behavior on educational aspirations: a study of US high school seniors. *Journal of School Health*, *81*(8), 485-492. doi:10.1111/j.1746-1561.2011.00618.x
- Battin-Pearson, S., Newcomb, M. D., Abbott, R. D., Hill, K. G., Catalano, R. F., & Hawkins, J. D. (2000). Predictors of early high school dropout: A test of five theories. *Journal of Educational Psychology*, *92*(3), 568–582. doi:10.1037/0022-0663.92.3.568

- Belfield, C. R., Levin, H. M., & Rosen, R. (2012). The Economic Value of Opportunity Youth. *Corporation for National and Community Service*.
- Benach, J., Vives, A., Amable, M., Vanroelen, C., Tarafa, G., & Muntaner, C. (2014). Precarious employment: Understanding an emerging social determinant of health. *Annual Review of Public Health, 35*, 229-253. doi:10.1146/annurev-publhealth-032013-182500
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107*(2), 238-246.
- Berry, D., & Willoughby, M. T. (2017). On the practical interpretability of cross-lagged panel models: Rethinking a developmental workhorse. *Child Development, 88*(4), 1186-1206. doi:10.1111/cdev.12660
- Berwick, D. M., Murphy, J. M., Goldman, P. A., Ware, J. E., Barsky, A. J., & Weinstein, M. C. (1991). Performance of a five-item mental health screening test. *Medical Care, 29*(2), 169-176. doi:10.1097/00005650-199102000-00008
- Bloom, D. (2010). Programs and policies to assist high school dropouts in the transition to adulthood. *The Future of Children, 20*(1), 89-108.
- Blossfeld, H.-P., Skopek, J., Triventi, M., & Buchholz, S. (Eds.). (2015). *Gender, education and employment: an international comparison of school-to-work transitions*. Cheltenham, UK: Edward Elgar Publishing. doi:10.4337/9781784715038
- Bogart, L. M., Collins, R. L., Ellickson, P. L., & Klein, D. J. (2007). Are adolescent substance users less satisfied with life as young adults and if so, why?. *Social Indicators Research, 81*(1), 149-169.
- Booth, B. M., Kirchner, J., Fortney, J., Ross, R., & Rost, K. (2000). Rural at-risk drinkers: correlates and one-year use of alcoholism treatment services. *Journal of Studies on Alcohol, 61*(2), 267-277.
- Bray, I., & Gunnell, D. (2006). Suicide rates, life satisfaction and happiness as markers for population mental health. *Social Psychiatry and Psychiatric Epidemiology, 41*(5), 333-337.
- Broderick, C. B. (1993). *Understanding family process: Basics of family systems theory*. Thousand Oaks, CA: Sage.
- Bronfenbrenner, U., & Morris, P. A. (2007). The bioecological model of human development. In W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology* (Vol I, pp. 793-828). Hoboken, NJ: Wiley.
- Brown, B. V., & Emig, C. (1999). Prevalence, patterns, and outcomes. In D. I. Besharov (Ed.), *America's disconnected youth: Toward a preventive strategy* (pp. 101-116). Washington, DC: CWLA Press.

Budde, S., & Schene, P. (2004). Informal social support interventions and their role in violence prevention: An agenda for future evaluation. *Journal of Interpersonal Violence, 19*(3), 341-355. doi:10.1177/0886260503261157

Burd-Sharps, S., & Lewis, K. (2018). More than a million reasons for hope: Youth disconnection in America today. Brooklyn, NY: Measure of America. Retrieved america.org/youth-disconnection-2018/

Burt, K. B., & Masten, A. S. (2010). Development in the transition to adulthood: Vulnerabilities and opportunities. In J. E. Grant & M. N. Potenza (Eds.), *Young adult mental health* (pp. 5-18). New York: Oxford University Press.

Burt, K. B., Obradović, J., Long, J. D., & Masten, A. S. (2008). The interplay of social competence and psychopathology over 20 years: Testing transactional and cascade models. *Child Development, 79*(2), 359-374.

Bynner, J., & Parsons, S. (2002). Social exclusion and the transition from school to work: The case of young people not in education, employment, or training (NEET). *Journal of Vocational Behavior, 60*(2), 289-309. doi:10.1006/jvbe.2001.1868

Carnevale, A. P., Smith, N., & Strohl, J. (2010). *Help wanted: Projections of job and education requirements through 2018*. Lumina Foundation.

Caruana, E., Allott, K., Farhall, J., Parrish, E. M., Davey, C. G., Chanen, A. M., ... & Cotton, S. M. (2019a). Factors associated with vocational disengagement among young people entering mental health treatment. *Early Intervention in Psychiatry, 13*(4), 961-968.

Caruana, E., Farhall, J., Cotton, S. M., Parrish, E., van-der-EL, K., Davey, C. G., ... & Allott, K. (2019b). Vocational engagement among young people entering mental health treatment compared with their general population peers. *Early Intervention in Psychiatry, 13*(3), 692-696. doi:10.1111/eip.12712

Castellanos-Ryan, N., O'Leary-Barrett, M., & Conrod, P. J. (2013). Substance-use in childhood and adolescence: A brief overview of developmental processes and their clinical implications. *Journal of the Canadian Academy of Child and Adolescent Psychiatry, 22*(1), 41.

Catalano, R. F., Fagan, A. A., Gavin, L. E., Greenberg, M. T., Irwin Jr, C. E., Ross, D. A., & Shek, D. T. (2012). Worldwide application of prevention science in adolescent health. *The Lancet, 379*(9826), 1653-1664. doi:10.1016/S0140-6736(12)60238-4

Chandra, A., & Minkovitz, C. S. (2006). Stigma starts early: Gender differences in teen willingness to use mental health services. *Journal of Adolescent Health, 38*(6), 754.e1-754.e8. doi:10.1016/j.jadohealth.2005.08.011

- Chassin, L., & Handley, E. D. (2006). Parents and families as contexts for the development of substance use and substance use disorders. *Psychology of Addictive Behaviors*, 20(2), 135.
- Chassin, L., Hussong, A., & Beltran, I. (2009). Adolescent substance use. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (pp. 723-763). Hoboken, NJ: Wiley.
- Child Trends. (1999). NLSY97 Codebook supplement main file round 1: Appendix 9: Family process and adolescent outcome measures. rom
<https://www.nlsinfo.org/sites/nlsinfo.org/files/attachments/12125/app9pdf.pdf>
- Chung, T. E., Gozdzik, A., Palma Lazgare, L. I., To, M. J., Aubry, T., Frankish, J., ... & Stergiopoulos, V. (2018). Housing first for older homeless adults with mental illness: a subgroup analysis of the at home/Chez Soi randomized controlled trial. *International Journal of Geriatric Psychiatry*, 33(1), 85-95. doi:10.1002/gps.4682
- Cockx, B., & Picchio, M. (2013). Scarring effects of remaining unemployed for long-term unemployed school-leavers. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 176(4), 951-980. doi:10.1111/j.1467-985X.2012.01086.x
- Collins, L. M., & Lanza, S. T. (2010). *Latent class and latent transition analysis: With applications in the social, behavioral, and health sciences*. New York, NY: Wiley.
- Conway, K. P., Compton, W., Stinson, F. S., & Grant, B. F. (2006). Lifetime comorbidity of DSM-IV mood and anxiety disorders and specific drug use disorders: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Journal of Clinical Psychiatry*, 67(2), 247-257.
- Coomber, K., Toumbourou, J. W., Miller, P., Staiger, P. K., Hemphill, S. A., & Catalano, R. F. (2011). Rural adolescent alcohol, tobacco, and illicit drug use: a comparison of students in Victoria, Australia, and Washington State, United States. *The Journal of Rural Health*, 27(4), 409-415. doi:10.1111/j.1748-0361.2010.00360.x
- Cornaglia, F., Crivellaro, E., & McNally, S. (2015). Mental health and education decisions. *Labour Economics*, 33, 1-12. doi:10.1016/j.labeco.2015.01.005
- Crockett, L. J., & Beal, S. J. (2012). The life course in the making: Gender and the development of adolescents' expected timing of adult role transitions. *Developmental Psychology*, 48(6), 1727-1738. doi:10.1037/a0027538
- Dishion, T. J., & Tipsord, J. M. (2011). Peer contagion in child and adolescent social and emotional development. *Annual Review of Psychology*, 62, 189-214. doi:10.1146/annurev.psych.093008.100412

Dixon, M. A., & Chartier, K. G. (2016). Alcohol use patterns among urban and rural residents: Demographic and social influences. *Alcohol Research: Current Reviews*, 38(1), 69-77.

Doku, D. T., Acacio-Claro, P. J., Koivusilta, L., & Rimpelä, A. (2019). Health and socioeconomic circumstances over three generations as predictors of youth unemployment trajectories. *European Journal of Public Health*, 29(3), 517-523. doi:10.1093/eurpub/cky242

Egan, M., Daly, M., & Delaney, L. (2015). Childhood psychological distress and youth unemployment: Evidence from two British cohort studies. *Social Science & Medicine*, 124, 11-17. doi:10.1016/j.socscimed.2014.11.023

Elder, G. H., & Shanahan, M. J. (2007). The life course and human development. In R. Lerner (Ed.), *Handbook of child psychology* (Vol. 1, pp. 665-715). Hoboken, NJ: Wiley. doi:10.1002/9780470147658.chpsy0112

Enders, C. K., & Gottschall, A. C. (2011). Multiple imputation strategies for multiple group structural equation models. *Structural Equation Modeling*, 18(1), 35-54.

Ferguson, K. M. (2018). Nonvocational outcomes from a randomized controlled trial of two employment interventions for homeless youth. *Research on Social Work Practice*, 28(5), 603-618. doi:10.1177/1049731517709076

Fergusson, D. M., Horwood, L. J., & Woodward, L. J. (2001). Unemployment and psychosocial adjustment in young adults: causation or selection? *Social Science & Medicine*, 53(3), 305-320. doi:10.1016/S0277-9536(00)00344-0

Fletcher, J., & Wolfe, B. (2008). Child mental health and human capital accumulation: The case of ADHD revisited. *Journal of Health Economics*, 27(3), 794-800. doi:10.1016/j.jhealeco.2007.10.010

Fryer, D. (1986). Employment deprivation and personal agency during unemployment: A critical discussion of Jahoda's explanation of the psychological effects of unemployment. *Social Behaviour*, 1(1), 3-23.

Furstenberg Jr, F. F. (2010). On a new schedule: Transitions to adulthood and family change. *The Future of Children*, 20(1), 67-87.

Gaspani, F. (2018). Young-adults NEET in Italy: orientations and strategies toward the future. *International Journal of Sociology and Social Policy*, 38(1/2), 150-164. doi:10.1108/IJSSP-04-2017-0038

Gaylord-Harden, N. K., Dickson, D., & Pierre, C. (2016). Profiles of community violence exposure among African American youth: An examination of desensitization to violence using latent class analysis. *Journal of Interpersonal Violence*, 31(11), 2077-2101. doi:10.1177/0886260515572474

- Gfroerer, J. C., Greenblatt, J. C., & Wright, D. A. (1997). Substance use in the US college-age population: differences according to educational status and living arrangement. *American Journal of Public Health, 87*(1), 62-65. doi:10.2105/ajph.87.1.62
- Goldman-Mellor, S., Caspi, A., Arseneault, L., Ajala, N., Ambler, A., Danese, A., ... & Wong, C. (2016). Committed to work but vulnerable: Self-perceptions and mental health in NEET 18-year olds from a contemporary British cohort. *Journal of Child Psychology and Psychiatry, 57*(2), 196-203.
- Gomez, R., Thompson, S. J., & Barczyk, A. N. (2010). Factors associated with substance use among homeless young adults. *Substance Abuse, 31*(1), 24-34. doi:10.1080/08897070903442566
- Gonçalves, H., Pearson, R. M., Horta, B. L., González-Chica, D. A., Castilho, E., Damiani, M., ... & Victora, C. G. (2016). Maternal depression and anxiety predicts the pattern of offspring symptoms during their transition to adulthood. *Psychological Medicine, 46*(2), 415-424.
- Gonzalez, J. M. R., Salas-Wright, C. P., Connell, N. M., Jetelina, K. K., Clipper, S. J., & Businelle, M. S. (2016). The long-term effects of school dropout and GED attainment on substance use disorders. *Drug and Alcohol Dependence, 158*, 60-66. doi:10.1016/j.drugalcdep.2015.11.002
- Graber, J. A., & Sontag, L. M. (2004). Internalizing problems during adolescence. In R. M. Lerner & L. Steinberg (Eds.) *Handbook of adolescent psychology* (3rd Ed., Vol. 1, pp. 587-626). Hoboken, NJ: Wiley.
- Gutiérrez-García, R. A., Benjet, C., Borges, G., Ríos, E. M., & Medina-Mora, M. E. (2018). Emerging adults not in education, employment or training (NEET): Socio-demographic characteristics, mental health and reasons for being NEET. *BMC Public Health, 18*(1), 1201.
- Gutiérrez-García, R. A., Benjet, C., Borges, G., Ríos, E. M., & Medina-Mora, M. E. (2017). NEET adolescents grown up: Eight-year longitudinal follow-up of education, employment and mental health from adolescence to early adulthood in Mexico City. *European Child & Adolescent Psychiatry, 26*(12), 1459-1469.
- Hadar, U., Barak, Y., Hadar, O., & Ring, A. (1996). Patterns of psychoactive drugs abuse by detached youths. *New Trends in Experimental and Clinical Psychiatry, 12*(4), 261-264.
- Hair, E. C., Moore, K. A., Ling, T. J., McPhee-Baker, C., & Brown, B. V. (2009). *Youth who are "disconnected" and those who then reconnect: Assessing the influence of family, programs, peers and communities*. Washington, DC: Child Trends. Retrieved from <https://www.childtrends.org/wp-content/uploads/2013/04/8.pdf>.

- Hale, D. R., & Viner, R. M. (2018). How adolescent health influences education and employment: investigating longitudinal associations and mechanisms. *Journal of Epidemiology & Community Health*, 72(6), 465-470. doi:10.1136/jech-2017-209605
- Hall-Lande, J. A., Eisenberg, M. E., Christenson, S. L., & Neumark-Sztainer, D. (2007). Social isolation, psychological health, and protective factors in adolescence. *Adolescence*, 42(166), 265-286.
- Hall, J. (2008). Area probability sample. (pp. 34-36). In P. J. Lavrakas (Ed.) *Encyclopedia of Survey Research Methods*. Thousand Oaks, CA, USA: Sage Publications. doi:10.4135/9781412963947.n23
- Hall, W. D., Patton, G., Stockings, E., Weier, M., Lynskey, M., Morley, K. I., & Degenhardt, L. (2016). Why young people's substance use matters for global health. *The Lancet Psychiatry*, 2016(3), 265-279. doi:10.1016/S2215-0366(16)00013-4
- Hallett, R. E., Freas, A., & Mo, E. (2018). The case for a single point of contact for college students experiencing homelessness. *New Directions for Community Colleges*, 2018(184), 39-49. doi:10.1002/cc.20326
- Hallett, R. E., Westland, M. A., & Mo, E. (2018). A trauma-informed care approach to supporting foster youth in community college. *New Directions for Community Colleges*, 2018(181), 49-58. doi:10.1002/cc.20291
- Hallfors, D., Vevea, J. L., Iritani, B., Cho, H., Khatapoush, S., & Saxe, L. (2002). Truancy, grade point average, and sexual activity: A meta-analysis of risk indicators for youth substance use. *Journal of School Health*, 72(5), 205-211.
- Hamaker, E. L., Kuiper, R. M., & Grasman, R. (2015). A critique of the cross-lagged panel model. *Psychological Methods*, 20(1), 102–116. doi:10.1037/a0038889
- Hannan, D. F., Riain, S. Ó., & Whelan, C. T. (1997). Youth unemployment and psychological distress in the Republic of Ireland. *Journal of Adolescence*, 20(3), 307-320. doi:10.1006/jado.1997.0087
- Hansen, D. M., & Jarvis, P. A. (2000). Adolescent employment and psychosocial outcomes: A comparison of two employment contexts. *Youth & Society*, 31(4), 417-436. doi:10.1177/0044118x00031004002
- Hanson, C. L., Novilla, M. L. L., Barnes, M. D., Eggett, D., McKell, C., Reichman, P., & Havens, M. (2008). Using the rural-urban continuum to explore adolescent alcohol, tobacco, and other drug use in Montana. *Journal of Child & Adolescent Substance Abuse*, 18(1), 93-105. doi:10.1080/15470650802544289
- Hardie, J. H., & Seltzer, J. A. (2016). Parent-child relationships at the transition to adulthood: A comparison of Black, Hispanic, and White immigrant and Native-born youth. *Social Forces*, 95(1), 321-353. doi:10.1093/sf/sow033

- Hartley, D. (2004). Rural health disparities, population health, and rural culture. *American Journal of Public Health, 94*(10), 1675-1678. doi:10.2105/AJPH.94.10.1675
- Harvey, J., & Delfabbro, P. H. (2004). Psychological resilience in disadvantaged youth: A critical overview. *Australian Psychologist, 39*(1), 3-13. doi:10.1080/00050060410001660281
- Havighurst, R. J. (1972). *Developmental tasks and education* (3rd ed). New York: David McKay Company.
- Heckhausen, J. (2006). *Developmental regulation in adulthood: Age-normative and sociostructural constraints as adaptive challenges*. Cambridge University Press.
- Heckhausen, J., & Schulz, R. (1993). Optimisation by selection and compensation: Balancing primary and secondary control in life span development. *International Journal of Behavioral Development, 16*(2), 287-303. doi:10.1177/016502549301600210
- Hefner, J., & Eisenberg, D. (2009). Social support and mental health among college students. *American Journal of Orthopsychiatry, 79*(4), 491-499. doi:10.1037/a0016918
- Henderson, J. L., Hawke, L. D., Chaim, G., & National Youth Screening Project Network (NYSPN) (2017). Not in employment, education or training: Mental health, substance use, and disengagement in a multi-sectoral sample of service-seeking Canadian youth. *Children and Youth Services Review, 75*, 138-145. doi:10.1016/j.childyouth.2017.02.024
- Henry, K. L., & Thornberry, T. P. (2010). Truancy and escalation of substance use during adolescence. *Journal of Studies on Alcohol and Drugs, 71*(1), 115-124. doi:10.15288/jsad.2010.71.115
- Hilley, C. D., Lindstrom Johnson, S. R., Ferguson, K., Infurna, F., & Jager, J. (2019). *Substance use and mental health among opportunity youth: A scoping review*. Unpublished manuscript, T. Denny Sanford School of Social and Family Dynamics, Arizona State University, Tempe, Arizona, USA.
- Hingson, R., Zha, W., & Smyth, D. (2017). Magnitude and trends in heavy episodic drinking, alcohol-impaired driving, and alcohol-related mortality and overdose hospitalizations among emerging adults of college ages 18–24 in the United States, 1998–2014. *Journal of Studies on Alcohol and Drugs, 78*(4), 540-548. doi:10.15288/jsad.2017.78.540
- Hodgkinson, S., Godoy, L., Beers, L. S., & Lewin, A. (2017). Improving mental health access for low-income children and families in the primary care setting. *Pediatrics, 139*(1), e20151175. doi:10.1542/peds.2015-1175

Hoeben, E. M., Meldrum, R. C., Walker, D. A., & Young, J. T. (2016). The role of peer delinquency and unstructured socializing in explaining delinquency and substance use: A state-of-the-art review. *Journal of Criminal Justice, 47*, 108-122. doi:10.1016/j.jcrimjus.2016.08.001

Hofferth, S. L., & Moon, U. J. (2016). How do they do it? The immigrant paradox in the transition to adulthood. *Social Science Research, 57*, 177-194. doi:10.1016/j.ssresearch.2015.12.013

Hogan, D. P., & Astone, N. M. (1986). The transition to adulthood. *Annual Review of Sociology, 12*(1), 109-130.

Holloway, E. M., Rickwood, D., Rehm, I. C., Meyer, D., Griffiths, S., & Telford, N. (2018). Non-participation in education, employment, and training among young people accessing youth mental health services: demographic and clinical correlates. *Advances in Mental Health, 16*(1), 19-32. doi:10.1080/18387357.2017.1342553

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1-55. doi:10.1080/10705519909540118

Hurst, D., Kelly, D., & Princiotta, D. (2004). Educational attainment of high school dropouts 8 years later. U.S. Department of Education, Institute for Education Sciences, National Center for Education Statistics. Retrieved from <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2005026>

Jager, J., Keyes, K. M., & Schulenberg, J. E. (2015). Historical variation in young adult binge drinking trajectories and its link to historical variation in social roles and minimum legal drinking age. *Developmental Psychology, 51*(7), 962-974. doi:10.1037/dev0000022

Jager, J., Schulenberg, J. E., O'Malley, P. M., & Bachman, J. G. (2013). Historical variation in drug use trajectories across the transition to adulthood: the trend toward lower intercepts and steeper, ascending slopes. *Development and Psychopathology, 25*(2), 527-543. doi:10.1017/S0954579412001228

Johnson-Webb, K. D., Baer, L. D., & Gesler, W. M. (1997). What is rural? Issues and considerations. *The Journal of Rural Health, 13*(3), 253-256.

Johnston, L. D. & O'Malley, P. M. (1985). Issues of validity and population coverage in student surveys of drug use. In B. A. Rouse, N. J. Kozel, & L. G. Richards (Eds.), *Self-report methods of estimating drug use: Meeting current challenges to validity* (NIDA Research Monograph No. 57 (ADM) 85 1402). Washington, DC: U.S. Government Printing Office.

Kalleberg, A. L. (2018). Precarious work and young workers in the United States. In L.S. Chancer, M. Sánchez-Jankowski, & C. Trost (Eds.), *Youth, jobs, and the future: Problems and prospects*. Oxford University Press.

- Karas Montez, J., & Friedman, E. M. (2015). Educational attainment and adult health: Under what conditions is the association causal? *Social Science & Medicine*, *127*, 1-7. doi:10.1016/j.socscimed.2014.12.029
- Kelly, M. J., Dunstan, F. D., Lloyd, K., & Fone, D. L. (2008). Evaluating cutpoints for the MHI-5 and MCS using the GHQ-12: a comparison of five different methods. *BMC Psys1*, *10*. doi:10.1186/1471-244X-8-10
- Kenny, D. A. (2015). *Measuring model fit*. Retrieved from <http://www.davidakenny.net/cm/fit.htm>
- Kerr, J., Minh, A., Siddiqi, A., Muntaner, C., & O'Campo, P. (2019). A cross-country comparison of alcohol, tobacco, and marijuana use among youth who are employed, in school or out of the labor force and school (OLFS). *Journal of Youth Studies*, *22*(5), 623-641. doi:10.1080/13676261.2018.1529862
- King, K. M., & Chassin, L. (2007). A prospective study of the effects of age of initiation of alcohol and drug use on young adult substance dependence. *Journal of Studies on Alcohol and Drugs*, *68*(2), 256-265. doi:10.15288/jsad.2007.68.256
- Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). New York: Guilford.
- Korous, K. M., Causadias, J. M., Bradley, R. H., & Luthar, S. S. (2018). Unpacking the link between socioeconomic status and behavior problems: A second-order meta-analysis. *Development and Psychopathology*, *30*(5), 1889-1906. doi:10.1017/S0954579418001141
- Kovess-Masfety, V., Leray, E., Denis, L., Husky, M., Pitrou, I., & Bodeau-Livinec, F. (2016). Mental health of college students and their non-college-attending peers: results from a large French cross-sectional survey. *BMC Psychology*, *4*(20). doi:10.1186/s40359-016-0124-5
- Kozloff, N., Adair, C. E., Lazgare, L. I. P., Poremski, D., Cheung, A. H., Sandu, R., & Sdoigiopoulos, V. (2016). "Housing first" for homeless youth with mental illness. *Pediatrics*, *138*(4), e20161514. doi:10.1542/peds.2016-1514
- Lander, F., Rasmussen, K., & Mortensen, J. T. (2012). Social inequalities in childhood are predictors of unemployment in early adulthood. *Danish Medical Journal*, *59*(3).
- Landstedt, E., & Almquist, Y. B. (2019). Intergenerational patterns of mental health problems: the role of childhood peer status position. *BMC Psychiatry*, *19*(1), 286.
- Lanza, S. T., Tan, X., & Bray, B. C. (2013). Latent class analysis with distal outcomes: A flexible model-based approach. *Structural Equation Modeling: A Multidisciplinary Journal*, *20*(1), 1-26. doi:10.1080/10705511.2013.742377

- Laursen, B., & Williams, V. A. (1997). Perceptions of interdependence and closeness in family and peer relationships among adolescents with and without romantic partners. *New Directions for Child and Adolescent Development*, 1997(78), 3-20. doi:10.1002/cd.23219977803
- Lee, J. O., Hill, K. G., Hartigan, L. A., Boden, J. M., Guttmanova, K., Kosterman, R., ... & Catalano, R. F. (2015). Unemployment and substance use problems among young adults: Does childhood low socioeconomic status exacerbate the effect? *Social Science & Medicine*, 143, 36-44. doi:10.1016/j.socscimed.2015.08.016
- Lee, R. S. C., Hermens, D. F., Scott, J., O'Dea, B., Glozier, N., Scott, E. M., & Hickie, I. B. (2017). A transdiagnostic study of education, employment, and training outcomes in young people with mental illness. *Psychological Medicine*, 47(12), 2061-2070.
- Lester, B. M., Marsit, C. J., Conradt, E., Bromer, C., & Padbury, J. F. (2012). Behavioral epigenetics and the developmental origins of child mental health disorders. *Journal of Developmental Origins of Health and Disease*, 3(6), 395-408.
- Liem, J. H., Lustig, K., & Dillon, C. (2010). Depressive symptoms and life satisfaction among emerging adults: A comparison of high school dropouts and graduates. *Journal of Adult Development*, 17(1), 33-43.
- Lindell, A. K., & Campione-Barr, N. (2017). Continuity and change in the family system across the transition from adolescence to emerging adulthood. *Marriage & Family Review*, 53(4), 388-416. doi:10.1080/01494929.2016.1184212
- Liu, J. (2004). Childhood externalizing behavior: Theory and implications. *Journal of Child and Adolescent Psychiatric Nursing*, 17(3), 93-103. doi:10.1111/j.1744-6171.2004.tb00003.x
- Lo, Y., Mendell, N. R., & Rubin, D. B. (2001). Testing the number of components in a normal mixture. *Biometrika*, 88, 767-778. doi:10.1093/biomet/88.3.767
- Longest, K. C., & Shanahan, M. J. (2007). Adolescent work intensity and substance use: The mediational and moderational roles of parenting. *Journal of Marriage and Family*, 69(3), 703-720. doi:10.1111/j.1741-3737.2007.00401.x
- Loprest, P., Spaulding, S., & Nigh'ingale, D. S. (2019). Disconnected young adults: Increasing engagement and opportunity. *RSF: The Russell Sage Foundation Journal of the Social Sciences*, 5(5), 221-243. doi:10.7758/RSF.2019.5.5.11
- Luhmann, M., Orth, U., Specht, J., Kandler, C., & Lucas, R. E. (2014). Studying changes in life circumstances and personality: It's about time. *European Journal of Personality*, 28(3), 256-266. doi:10.1002/per.1951
- Luthar, S. S., & Becker, B. E. (2002). Privileged but pressured? A study of affluent youth. *Child Development*, 73(5), 1593-1610. doi:10.1111/1467-8624.00492

- Lynne-Landsman, S. D., Bradshaw, C. P., & Ialongo, N. S. (2010). Testing a developmental cascade model of adolescent substance use trajectories and young adult adjustment. *Development and Psychopathology*, 22(4), 933-948. doi:10.1017/S0954579410000556
- MacDonald, R. (2008). Disconnected youth? Social exclusion, the 'underclass' & economic marginality. *Social Work & Society*, 6(2), 236-248.
- Macfie, J., Brumariu, L. E., & Lyons-Ruth, K. (2015). Parent-child role-confusion: A critical review of an emerging concept. *Developmental Review*, 36, 34-57. doi:10.1016/j.dr.2015.01.002
- Maggs, J. L., Staff, J., Kloska, D. D., Patrick, M. E., O'Malley, P. M., & Schulenberg, J. (2015). Predicting young adult degree attainment by late adolescent marijuana use. *Journal of Adolescent Health*, 57(2), 205-211. doi:10.1016/j.jadohealth.2015.04.028
- Mallett, C. A. (2016). The school-to-prison pipeline: A critical review of the punitive paradigm shift. *Child and Adolescent Social Work Journal*, 33(1), 15-24. doi:10.1007/s10560-015-0397-1
- Markwardt, F. J. (1998). Peabody individual achievement test-Revised. Circle Pines, MN, USA: American Guidance Service.
- Marques, S. C., Pais-Ribeiro, J. L., & Lopez, S. J. (2011). Use of the "Mental Health Inventory-5" with Portuguese 10-15 years old. *The Spanish Journal of Psychology*, 14(1), 478-485. doi:10.5209/rev_SJOP.2011.v14.n1.43
- Marroquín, B. (2011). Interpersonal emotion regulation as a mechanism of social support in depression. *Clinical Psychology Review*, 31(8), 1276-1290. doi:10.1016/j.cpr.2011.09.005
- Masten, A. S. (2018). Resilience theory and research on children and families: Past, present, and promise. *Journal of Family Theory & Review*, 10(1), 12-31. doi:10.1111/jftr.12255
- Maynard, B. R., Salas-Wright, C. P., Vaughn, M. G., & Peters, K. E. (2012). Who are truant youth? Examining distinctive profiles of truant youth using latent profile analysis. *Journal of Youth and Adolescence*, 41(12), 1671-1684.
- McArdle, J. J. (2009). Latent variable modeling of differences and changes with longitudinal data. *Annual Review of Psychology*, 60, 577-605. doi:10.1146/annurev.psych.60.110707.163612
- McDermott, E. R., Anderson, S., & Zaff, J. F. (2018). Dropout typologies: Relating profiles of risk and support to later educational re-engagement. *Applied Developmental Science*, 22(3), 217-232. doi:10.1080/10888691.2016.1270764

- McLoyd, V. C. (1998). Socioeconomic disadvantage and child development. *American Psychologist*, *53*(2), 185–204. doi:10.1037/0003-066X.53.2.185
- Mello, Z. R. (2008). Gender variation in developmental trajectories of educational and occupational expectations and attainment from adolescence to adulthood. *Developmental Psychology*, *44*(4), 1069.
- Mello, Z. R., Anton-Stang, H. M., Monaghan, P. L., Roberts, K. J., & Worrell, F. C. (2012). A longitudinal investigation of African American and Hispanic adolescents' educational and occupational expectations and corresponding attainment in adulthood. *Journal of Education for Students Placed at Risk (JESPAR)*, *17*(4), 266-285.
- Mendelson, T., Mmari, K., Blum, R. W., Catalano, R. F., & Brindis, C. D. (2018). Opportunity youth: insights and opportunities for a public health approach to reengage disconnected teenagers and young adults. *Public Health Reports*, *133*(Suppl. 1), 54S-64S. doi:10.1177/0033354918799344
- Messersmith, E. E., & Schulenberg, J. E. (2008). When can we expect the unexpected? Predicting educational attainment when it differs from previous expectations. *Journal of Social Issues*, *64*(1), 195-212.
- Miech, R. A., Johnston, L. D., O'Malley, P. M., Bachman, J. G., Schulenberg, J. E., & Patrick, M. E. (2019). *Monitoring the Future national survey results on drug use, 1975-2018: Volume I, Secondary school students*. Ann Arbor: Institute for Social Research, The University of Michigan.
- Mohamad, M., Mohammad, M., Mat Ali, N. A., & Awang, Z. (2018). The impact of life satisfaction on substance abuse: delinquency as a mediator. *International Journal of Adolescence and Youth*, *23*(1), 25-35. doi:10.1080/02673843.2016.1267021
- Molloy, S., & Potte). *NEET by choice? Investigating the links between motherhood and NEET status*. Canberra, Australia: The Ministry for Women. Retrieved from <https://ojs.victoria.ac.nz/LEW/article/download/2210/2049>.
- Moore, S., Krishnamurty, P., & Wolter, K. (2000). National Longitudinal Survey of Youth 1997 (NLSY97) Technical Sampling Report. Retrieved from <https://www.nlsinfo.org/sites/nlsinfo.org/files/attachments/121221/TechnicalSamplingReport.pdf>
- Mrug, S., Loosier, P. S., & Windle, M. (2008). Violence exposure across multiple contexts: Individual and joint effects on adjustment. *American Journal of Orthopsychiatry*, *78*(1), 70-84.
- Muthén, B. (2003). Statistical and substantive checking in growth mixture modeling: Comment on Bauer and Curran (2003). *Psychological Methods*, *8*(3), 369-377. doi:10.1037/1082-989X.8.3.369

- Muthén, B.O., & Asparouhov, T. (2020). Auxiliary variables in mixture model the BCH method in Mplus to estimate a distal outcome model and an arbitrary secondary model. Los Angeles, CA: Muthén & Muthén. Retrieved from <https://www.statmodel.com/examples/webnotes/webnote21.pdf>
- Muthén, L.K. & Muthén, B.O. (2019). Mplus User's Guide. Eighth Edition. Los Angeles, CA: Muthén & Muthén.
- National Center for Education Statistics (NCES). (2019). *Table 104.10: Rates of high school completion and bachelor's degree attainment among persons age 25 and over, by race/ethnicity and sex: Selected years, 1910 through 2018* [Data table]. U.S. Department of Education, Institute of Education Sciences. Retrieved from https://nces.ed.gov/programs/digest/d18/tables/dt18_104.10.asp
- Nylund-Gibson, K., & Choi, A. Y. (2018). Ten frequently asked questions about latent class analysis. *Translational Issues in Psychological Science, 4*(4), 440-461. doi:10.1037/tps0000176
- Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling: A Multidisciplinary Journal, 14*(4), 535-569. doi:10.1080/10705510701575396
- O'Malley, P. M., & Johnston, L. D. (2002). Epidemiology of alcohol and other drug use among American college students. *Journal of Studies on Alcohol, (Supplement 14)*, 23-39. doi:10.15288/jsas.2002.s14.23
- O'Malley, P. M., & Johnston, L. D. (2002). Epidemiology of alcohol and other drug use among American college students. *Journal of Studies on Alcohol, 14*, 23-39.
- Oesterle, S., Hawkins, J. D., & Hill, K. G. (2011). Men's and women's pathways to adulthood and associated substance misuse. *Journal of Studies on Alcohol and Drugs, 72* doi:10.15288/jsad.2010.71.847
- Organisation for Economic Co-operation and Development (OECD). (2019). Transition from school to work. Retrieved from https://stats.oecd.org/Index.aspx?DataSetCode=EAG_TRANS.
- Padilla-Walker, L. M., Nelson, L. J., & Carroll, J. S. (2012). Affording emerging adulthood: Parental financial assistance of their college-aged children. *Journal of Adult Development, 19*(1), 50-58. doi:10.1007/s10804-011-9134-y
- Paschall, M. J., Bersamin, M., & Flewelling, R. L. (2005). Racial/ethnic differences in the association between college attendance and heavy alcohol use: A national study. *Journal of Studies on Alcohol, 66*(2), 266–274 doi:10.15288/jsa.2005.66.266

- Patrick, M. E., Terry-McElrath, Y. M., Lanza, S. T., Jager, J., Schulenberg, J. E., & O'Malley, P. M. (2019). Shifting age of peak binge drinking prevalence: historical changes in normative trajectories among young adults aged 18 to 30. *Alcoholism: Clinical and Experimental Research*, 43(2), 287-298. doi:10.1111/acer.13933.
- Pearlin, L. T., Menaghan, E., Lieberman, M. & Mullan, J. T. (1981). The stress process. *Journal of Health and Social Behavior*, 22(4), 337-351. doi:10.2307/2136676
- Power, E., Clarke, M., Kelleher, I., Coughlan, H., Lynch, F., Connor, D., ... & Cannon, M. (2015). The association between economic inactivity and mental health among young people: a longitudinal study of young adults who are not in employment, education or training. *Irish Journal of Psychological Medicine*, 32(1), 155-160.
- Prickett, K. C., & Augustine, J. M. (2016). Maternal education and investments in children's health. *Journal of Marriage and Family*, 78(1), 7-25. doi:10.1111/jomf.12253
- Prince, D. M., Epstein, M., Nurius, P. S., Gorman-Smith, D., & Henry, D. B. (2019). Reciprocal effects of positive future expectations, threats to safety, and risk behavior across adolescence. *Journal of Clinical Child & Adolescent Psychology*, 48(1), 54-67.
- Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. Simon and Schuster.
- Randolph, K. A., Fraser, M. W., & Orthner, D. K. (2006). A strategy for assessing the impact of time-varying family risk factors on high school dropout. *Journal of Family Issues*, 27(7), 933-950. doi:10.1177/0192513X06287168
- Reiss, F. (2013). Socioeconomic inequalities and mental health problems in children and adolescents: a systematic review. *Social Science & Medicine*, 90, 24-31. doi:10.1016/j.socscimed.2013.04.026
- Rhemtulla, M., Brosseau-Liard, P. É., & Savalei, V. (2012). When can categorical variables be treated as continuous? A comparison of robust continuous and categorical SEM estimation methods under suboptimal conditions. *Psychological Methods*, 17(3), 354-373. doi:10.1037/a0029315
- Rhew, I. C., Hawkins, J. D., & Oesterle, S. (2011). Drug use and risk among youth in different rural contexts. *Health & Place*, 17(3), 775-783. doi:10.1016/j.healthplace.2011.02.003
- Rivera-Riquelme, M., Piqueras, J. A., & Cuijpers, P. (2019). The Revised Mental Health Inventory-5 (MHI-5) as an ultra-brief screening measure of bidimensional mental health in children and adolescents. *Psychiatry Research*, 274, 247-253. doi:10.1016/j.psychres.2019.02.045

Robbins, R. N., & Bryan, A. (2004). Relationships between future orientation, impulsive sensation seeking, and risk behavior among adjudicated adolescents. *Journal of Adolescent Research, 19*(4), 428-445. doi:10.1177/0743558403258860

Rudolph, K. D., & Flynn, M. (2007). Childhood adversity and youth depression: Influence of gender and pubertal status. *Development and Psychopathology, 19*(2), 497-521. doi:10.1017/S0954579407070241

Russell, L. (2014). Formerly NEET Young People's Pathways to Work: a case-study approach. *Power and Education, 6*(2), 182-196. doi:10.2304/power.2014.6.2.182

Sampson, R. J., & Laub, J. H. (2003). Desistance from crime over the life course. In J. T. Mortimer & M. J. Shanahan (Eds.) *Handbook of the life course* (pp. 295-309). Boston, MA: Springer.

Sampson, R. J., & Laub, J. H. (2005). A life-course view of the development of crime. *The Annals of the American Academy of Political and Social Science, 602*(1), 12-45. doi:10.1177/0002716205280075

Schaufeli, W. B. (1997). Youth unemployment and mental health: Some Dutch findings. *Journal of Adolescence, 20*(3), 281-292. doi:10.1006/jado.1997.0085

Schmillen, A., & Umkehrer, M. (2017). The scars of youth: Effects of early-career unemployment on future unemployment experience. *International Labour Review, 156*(3-4), 465-494. doi:10.1111/ilr.12079

Schoeneberger, J. A. (2012). Longitudinal attendance patterns: Developing high school dropouts. *The Clearing House: A journal of educational strategies, issues and ideas, 85*(1), 7-14. doi:10.1080/00098655.2011.603766

Schoeni, R. F., & Ross, K. E. (2005). Material Assistance from Families during the Transition to Adulthood. In R. A. Settersten, Jr., F. F. Furstenberg, Jr., & R. G. Rumbaut (Eds.), *On the frontier of adulthood: Theory, research, and public policy* (p. 396-416). Chicago: University of Chicago Press. doi:10.7208/chicago/9780226748924.001.0001

Schoon, I., & Heckhausen, J. (2019). Conceptualizing individual agency in the transition from school to work: A social-ecological developmental perspective. *Adolescent Research Review, 4*(2), 135-148. doi:10.1007/s40894-019-00111-3

Schulenberg, J. E., & Zarrett, N. R. (2006). *Mental Health During Emerging Adulthood: Continuity and Discontinuity in Courses, Causes, and Functions*. In J. J. Arnett & J. L. Tanner (Eds.), *Emerging adults in America: Coming of age in the 21st century* (p. 135-172). American Psychological Association. doi:10.1037/11381-006

Schulenberg, J. E., Johnston, L. D., O'Malley, P. M., Bachman, J. G., Miech, R. A., & Patrick, M. E. (2019). *Monitoring the Future national survey results on drug use, 1975-*

2018: *Volume II, College students and adults ages 19-60*. Ann Arbor: Institute for Social Research, The University of Michigan.

Schulenberg, J., Maslowsky, J., & Jager, J. (2018). Substance use and abuse during adolescence and the transition to adulthood are developmental phenomena: Conceptual and empirical considerations. In H. E. Fitzgerald & L. I. Puttler (Eds.) *Alcohol use disorders: A developmental science approach to etiology* (pp. 199-222). Oxford: Oxford University Press. doi:10.1093/oso/9780190676001.003.0012

Schwartz-Mette, R. A., & Rose, A. J. (2012). Co-rumination mediates contagion of internalizing symptoms within youths' friendships. *Developmental Psychology*, *48*(5), 1355–1365. doi:10.1037/a0027484

Sclove, S. L. (1987). Application of model-selection criteria to some problems in multivariate analysis. *Psychometrika*, *52*(3), 333-343.

Scott, J., Fowler, D., McGorry, P., Birchwood, M., Killackey, E., Christensen, H., ... & Singh, S. (2013). Adolescents and young adults who are not in employment, education, or training. *BMJ*, *347*(f5270). doi:10.1136/bmj.f5270

Selig, J. P., & Little, T. D. (2012). Autoregressive and cross-lagged panel analysis for longitudinal data. In B. Laursen, T. D. Little, & N. A. Card (Eds.), *Handbook of developmental research methods* (p. 265–278). New York: Guilford Press.

Serracant, P. (2014). A brute indicator for a NEET case: Genesis and evolution of a problematic concept and results from an alternative indicator. *Social Indicators Research*, *117*(2), 401-419. doi:10.1007/s11205-013-0352-5

Settersten, R. A., & Ray, B. (2010). What's going on with young people today? The long and twisting path to adulthood. *The Future of Children*, *20*(1), 19-41.

Settersten, R. A. (2007). Passages to adulthood: Linking demographic change and human development. *European Journal of Population*, *23*(3-4), 251-272. doi:10.1007/s10680-007-9132-8

Shanahan, M. J. (2000). Pathways to adulthood in changing societies: Variability and mechanisms in life course perspective. *Annual Review of Sociology*, *26*(1), 667-692. doi:10.1146/annurev.soc.26.1.667

Shane, J., & Heckhausen, J. (2019). Motivational theory of lifespan development. In B. B. Baltes, C. W. Rudolph, & H. Zacher (Eds.), *Work across the lifespan* (pp. 111-134). Cambridge, MA: Academic Press.

Simmons, R., & Thompson, R. (2011). Education and training for young people at risk of becoming NEET: findings from an ethnographic study of work-based learning programmes. *Educational Studies*, *37*(4), 447-450. doi:10.1080/03055698.2010.539783

- Sipsma, H. L., Ickovics, J. R., Lin, H., & Kershaw, T. S. (2012). Future expectations among adolescents: A latent class analysis. *American Journal of Community Psychology, 50*(1-2), 169-181. doi:10.1007/s10464-011-9487-1
- South, S. J., & Lei, L. (2015). Failures-to-launch and boomerang kids: Contemporary determinants of leaving and returning to the parental home. *Social Forces, 94*(2), 863-890. doi:10.1093/sf/sov064
- Spector, P. E. (2011). Social desirability bias. In M. S. Lewis-Black, A. Bryman, & T. F. Liao (Eds.) *The SAGE encyclopedia of social science research methods* (p. 1045). Thousand Oaks, CA: Sage.
- Sroufe, L. A., & Rutter, M. (1984). The domain of developmental psychopathology. *Child Development, 55*(1), 17-29. doi:10.2307/1129832
- Staff, J., Schulenberg, J. E., Maslowsky, J., Bachman, J. G., O'Malley, P. M., Maggs, J. L., & Johnston, L. D. (2010). Substance use changes and social role transitions: Proximal developmental effects on ongoing trajectories from late adolescence through early adulthood. *Development and Psychopathology, 22*(4), 917-932. doi:10.1017/S0954579410000544
- Stafford, E. M., Jackson, P. R., & Banks, M. H. (1980). Employment, work involvement and mental health in less qualified young people. *Journal of Occupational Psychology, 53*(4), 291-304. doi:10.1111/j.2044-8325.1980.tb00035.x
- Stewart, C. H., Berry, P., Przulj, D., & Treanor, C. (2017). Cancer-related health behaviours of young people not in education, employment or training ('NEET'): a cross-sectional study. *BMC Cancer, 17*(1), 165. doi:10.1186/s12885-017-3157-0
- Stice, E., Ragan, J., & Randall, P. (2004). Prospective relations between social support and depression: Differential direction of effects for parent and peer support? *Journal of Abnormal Psychology, 113*(1), 155-159. doi:10.1037/0021-843X.113.1.155
- Stone, A. L., Becker, L. G., Huber, A. M., & Catalano, R. F. (2012). Review of risk and protective factors of substance use and problem use in emerging adulthood. *Addictive Behaviors, 37*(7), 747-775. doi:10.1016/j.addbeh.2012.02.014
- Stone, J., Berrington, A., & Falkingham, J. (2014). Gender, turning points, and boomerangs: Returning home in young adulthood in Great Britain. *Demography, 51*(1), 257-276. doi:10.1007/s13524-013-0247-8
- Suh, S., Suh, J., & Houston, I. (2007). Predictors of categorical at-risk high school dropouts. *Journal of Counseling & Development, 85*(2), 196-203.
- Tamesberger, D., & Bacher, J. (2014). NEET youth in Austria: A typology including socio-demography, labour market behaviour and permanence. *Journal of Youth Studies, 17*(9), 1239-1259. doi:10.1080/13676261.2014.901492

- Thern, E., de Munter, J., Hemmingsson, T., & Rasmussen, F. (2017). Long-term effects of youth unemployment on mental health: Does a crisis make a difference? *Journal of Epidemiology & Community Health*, 71(4), 344-349. doi:10.1136/jech-2016-208012
- Thompson, S. J., McManus, H., & Voss, T. (2006). Posttraumatic stress disorder and substance abuse among youth who are homeless: Treatment issues and implications. *Brief Treatment and Crisis Intervention*, 6(3), 206-217.
- U.S. Bureau of Labor Statistics. (2019). Measuring the value of education. Retrieved from <https://www.bls.gov/careeroutlook/2018/data-on-display/education-pays.htm>
- U.S. Department of Housing and Urban Development [HUD]. (n.d.). *Using a housing first philosophy when serving youth*. Retrieved from <https://files.hudexchange.info/resources/documents/using-a-housing-first-philosophy-when-serving-youth.pdf>
- Uchino, B. N., Holt-Lunstad, J., Uno, D., & Flinders, J. B. (2001). Heterogeneity in the social networks of young and older adults: Prediction of mental health and cardiovascular reactivity during acute stress. *Journal of Behavioral Medicine*, 24(4), 361-382. doi:10.1023/A:1010634902498
- Varela, J. J., Zimmerman, M. A., Ryan, A. M., Stoddard, S. A., Heinze, J. E., & Alfaro, J. (2018). Life satisfaction, school satisfaction, and school violence: A mediation analysis for Chilean adolescent victims and perpetrators. *Child Indicators Research*, 11(2), 487-505.
- Vaughn, M. G., Maynard, B. R., Salas-Wright, C. P., Perron, B. E., & Abdon, A. (2013). Prevalence and correlates of truancy in the US: Results from a national sample. *Journal of Adolescence*, 36(4), 767-776. doi:10.1016/j.adolescence.2013.03.015
- Vermunt, J. K. (2010). Latent class modeling with covariates: Two improved three-step approaches. *Political analysis*, 18(4), 450-469. doi:10.1093/pan/mpq025
- Villanti, A. C., Niaura, R. S., Abrams, D. B., & Mermelstein, R. (2019). Preventing smoking progression in young adults: The concept of prevescalation. *Prevention Science*, 20(3), 377-384.
- Wang, K., Link, B. G., Corrigan, P. W., Davidson, L., & Flanagan, E. (2018). Perceived provider stigma as a predictor of mental health service users' internalized stigma and disempowerment. *Psychiatry Research*, 259, 526-531. doi:10.1016/j.psychres.2017.11.036
- West, S. G., Duan, N., Pequegnat, W., Gaist, P., Des Jarlais, D. C., Holtgrave, D., ... & Mullen, P. D. (2008). Alternatives to the randomized controlled trial. *American Journal of Public Health*, 98(8), 1351-1355. doi:10.2105/AJPH.2007.124446

Whiston, S. C., & Keller, B. K. (2004). The influences of the family of origin on career development: A review and analysis. *The Counseling Psychologist*, 32(4), 493-568.

Wight, V., Chau, M. M., Aratani, Y., Schwarz, S. W., & Thampi, K. (2010). A profile of disconnected young adults in 2010. New York: National Center for Children in Poverty. Retrieved from http://www.nccp.org/publications/pub_979.html

Winefield, H. R., Winefield, A. H., & Tiggemann, M. (1992). Social support and psychological well-being in young adults: The Multi-Dimensional Support Scale. *Journal of Personality Assessment*, 58(1), 198-210. doi:10.1207/s15327752jpa5801_17

Yates, S., & Payne, M. (2006). Not so NEET? A critique of the use of 'NEET' in setting targets for interventions with young people. *Journal of Youth Studies*, 9(3), 329-344. doi:10.1080/13676260600805671

Zullig, K. J., Valois, R. F., Huebner, E. S., Oeltmann, J. E., & Drane, J. W. (2001). Relationship between perceived life satisfaction and adolescents' substance abuse. *Journal of Adolescent Health*, 29(4), 279-288. doi:10.1016/S1054-139X(01)00269-5